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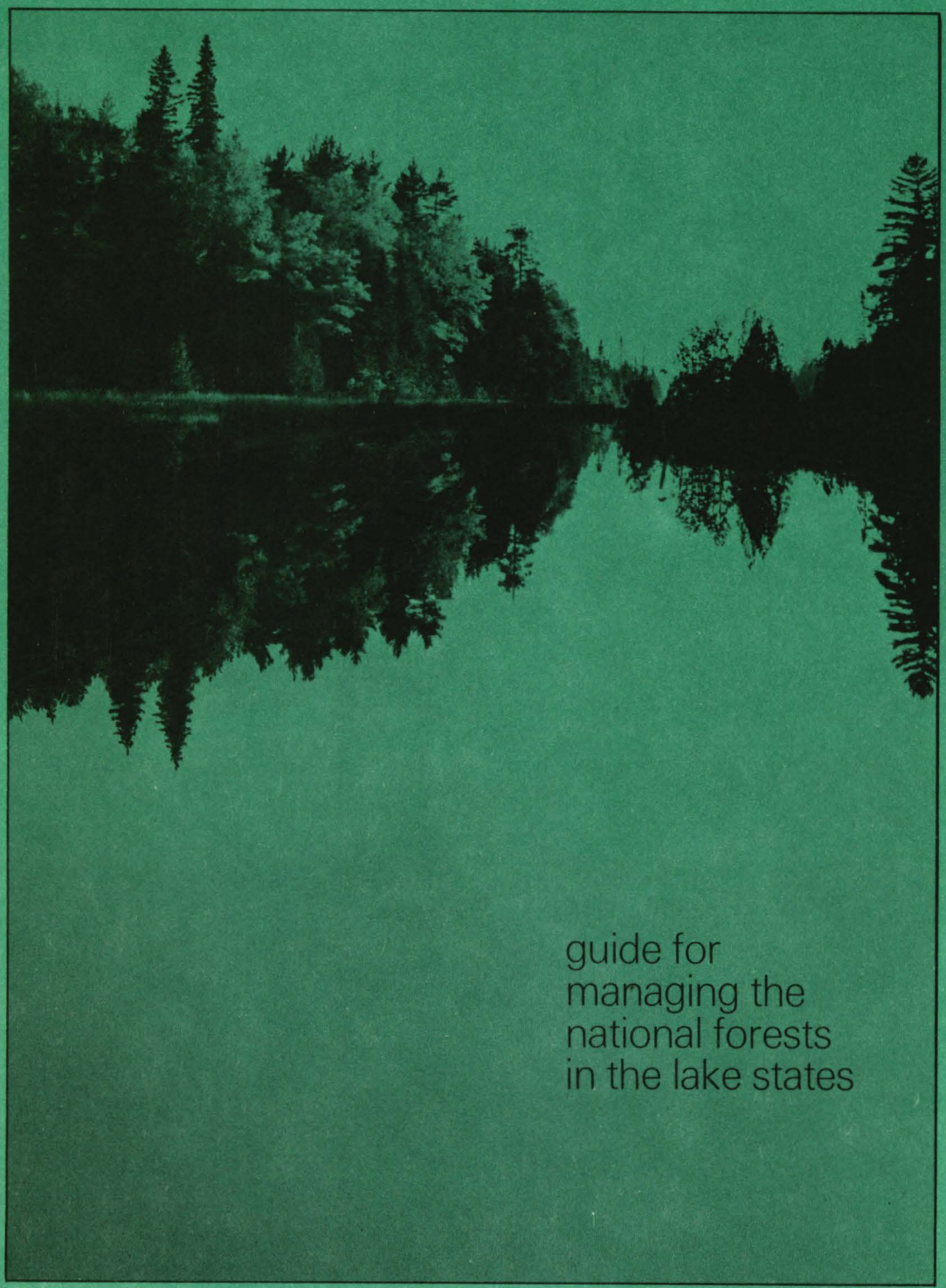

guide for managing the national forests in the lake states

eastern region • forest service • U.S. department of agriculture

WOOD · WATER · FORAGE
WILDLIFE · RECREATION
FOREST SERVICE
US
DEPARTMENT OF AGRICULTURE

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GUIDE FOR MANAGING THE NATIONAL FORESTS IN THE LAKE STATES

"Environmental Quality" has become the watchword of the 1970's. The term itself has many meanings. To some it means preserving the "unspoiled" nature that has existed in the past or returning it to some previous state. This assumes the most desirable environment is one that has not been changed by man. Others argue that as man is an important constituent of the environment, any environmental quality activity that does not include him is an incomplete concept. For the purpose of this Guide, we have considered man to be an integral part of the environment.

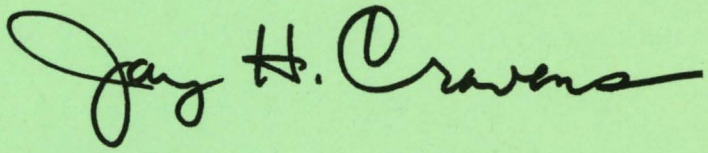
Included in the quality of man's environment are his social and economic systems. These, too, must be maintained at a satisfactory level. Quite often the demands made by man's social and economic systems are detrimental to the long-term survival of a natural system. Balancing the needs of the various systems is one of the land manager's most difficult jobs.

This Guide is the initial step in helping the Lake States National Forest managers meet the increasingly complex demands pressing upon these lands. Guides and plans can be truly valid only on the day they are completed. The data and assumptions inherent in the plan change through time, requiring that the plan be modified to keep its usefulness as a management tool. This requires a continuous "feedback process" so that as new information becomes available, it is quickly used to strengthen the plan.

Forest and Unit Plans will be developed within the guidelines established by this Area Guide. If data or experience developed in these plans show a need for amending the Area Guide, such amendments will be instituted. Additional public involvement will take place when, in the opinion of the responsible officer, the amendment is a significant change.

I will use the established management review system to determine on-the-ground adherence to the Forest and Unit Plans.

Forest Supervisors are expected to complete Forest Plans by January 1977. Upon completion of the Forest Plan, it is our objective to complete Unit Plans for 15 percent of the forest area per year and periodically update the Forest Plans.



JAY H. CRAVENS
REGIONAL FORESTER
EASTERN REGION

AUGUST 1975

GUIDE STATUS SUMMARY

Guide Reviews

Date	Team Leader

Forest General Management Reviews

Date	Forest	Team Leader

Summary of Amendments

Date	Page No(s).

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THE PLANNING AREA

Portions of three States—Michigan, Minnesota, and Wisconsin, make up the 75 million acre Lake States Planning Area, in which eight National Forests are located.

The area is known for many water bodies and diversified terrain. Excluding the Great Lakes, about 1 out of every 16 acres is surface water, with Minnesota's Chippewa National Forest defying the average and sporting 1 acre of water for every 5 acres of land. Farther north, lies the 2 million acre Superior National Forest with its nationally known Boundary Waters Canoe Area. While, to the southeast, in Michigan, rests the 500,000 acre Manistee Forest, luring visitors with its ivory white sand dunes. Altogether, National Forest lands total 7 million acres in the Lake States Area.

Geography is but one concern of Forest Service land planners and managers in this area. Population, economics, history and other social situations play important roles in creating the unique status and problems of the Lake States Forests.

In the country's early years, the Lake States were virtually untouched forests. But, in the 60 years following the Civil War, heavy logging operations nearly stripped the land of its timber resource, with few efforts made in reforestation. Following close on the heels of the lumberjacks were the farmers, and most of the trees which had missed the first axe swings were now felled to make way for fields.

Clearing of trees to make way for farms reached its peak during the early 1900's. Between 1925 and 1950, poor harvests and an unyielding environment proved much of the cleared area to be anything but prime farm land, and large acreages were allowed to revert back to forest. Counties, States and the Federal Government, realizing the value of forests to the Nation, began acquiring the abandoned lands. Today, approximately 36 million acres of the planning area are classified as forest. The remaining 39 million acres support agricultural activities, urban areas and other nonforest interests.

planning area

The economy of the Lake States area is dependent on natural resource based businesses. Forest industries employ the largest number of people, with agriculture, mining and recreation being the area's other leading employers. Growing demands for wood products, increased interest in minerals and the desire of many individuals in eastern cities to "get away from it all" through outdoor recreation offer optimistic looks into the area's economic future.

Natural resource based economies have traditionally grown slower than industrialized economies. The Lake States area is no exception, with a long history of slow economic growth. Seeking greater financial security, many young people have moved from the area. This out-migration is reflected in 33 percent of the Lake States area residents being 65 years of age or older, compared to the fact that only about 10 percent of the national population falls into this age bracket.

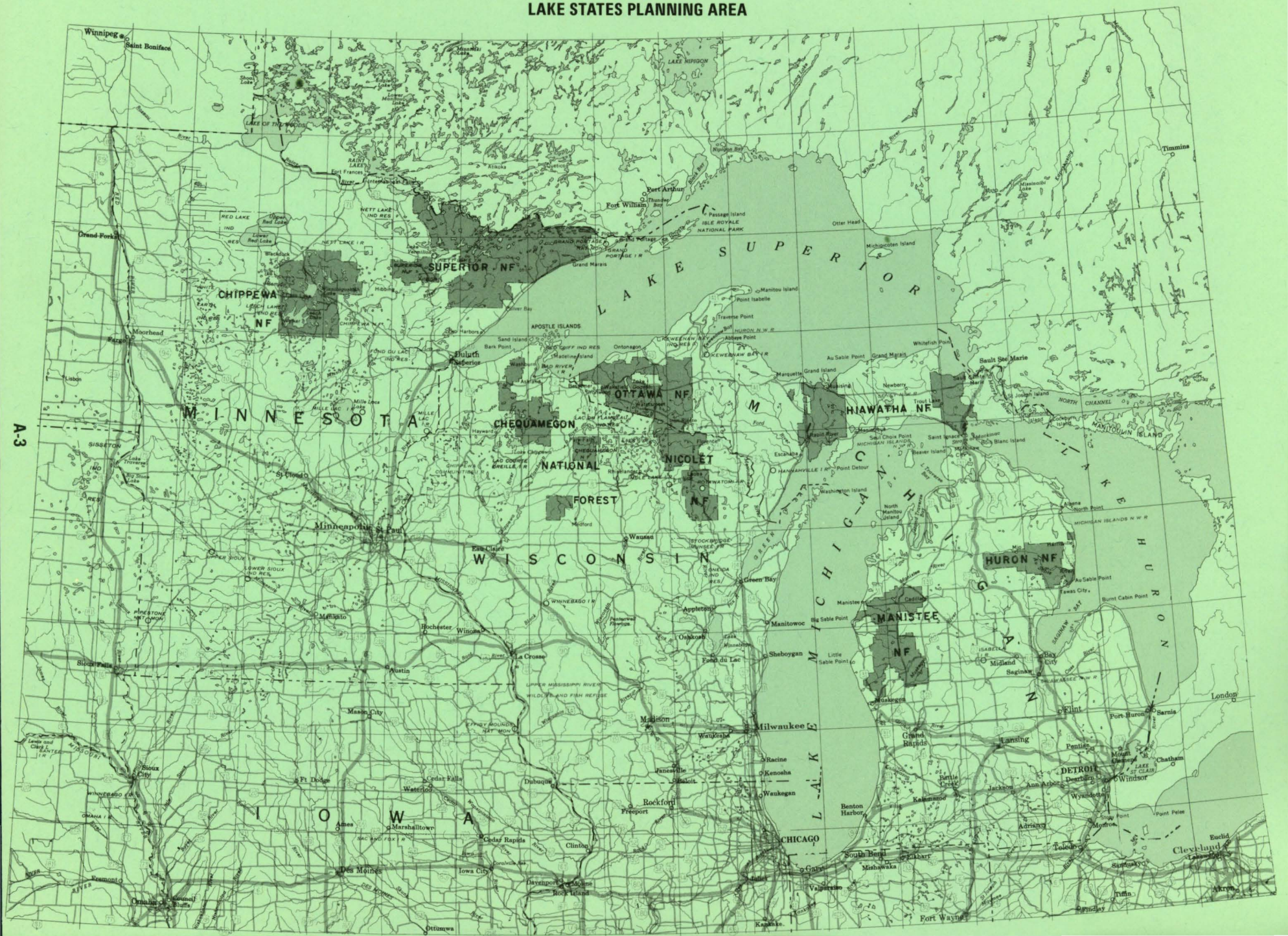
People within the planning area number only 28 per square mile—about half of the national average. The life-style of the area is classified as rural. The area's largest urban center is Duluth-Superior with a population of some 150,000 people. Total population within the Lake States Planning Area was estimated at 3.1 million people in 1970. It is expected to jump to 3.3 million by 1990 and 3.4 million by 2000.

However, these figures do not represent the true people pressure placed on the natural resources in the Lake States, as demands come from major urban centers adjacent to the planning area, including: Chicago, Detroit, Milwaukee, Minneapolis, and St. Paul. The populations of these cities, and the subsequent pressures on the area's natural resources are expected to increase at a faster rate than those of the people residing within the Lake States Planning Area boundaries.

Numbers are not the only consideration in the planning process, the people themselves and their special needs cause impacts on the land. Ethnic minority groups make up approximately 5 percent of the planning area's population. American Indians constitute the major minority represented. There are 20 reservations in the planning area, on which live a total of 15,000 Indians. With nine of these reservations located on, or adjacent to, National Forest land, Forest Service planning and management activities must consider the needs and social objectives of this group of people.

These are but a few of the elements considered in preparing the Guide for Managing the National Forests in the Lake States. It is not enough to look at each resource—human, renewable, finite—and develop land management policies. Time and the interdependency of the entire environmental system were examined and the costs and benefits, both monetary and immeasurable, weighed, before the Forest Service established these management guidelines. Time will be the fairest judge of the successes and failures.

LAKE STATES PLANNING AREA


Winnipeg
Saint Boniface
Grand Forks
Moorhead
Fargo
Lisbon
Sisseton
St Cloud
Minneapolis
St Paul
Eau Claire
Manitou
Hochester
Winona
Sioux Falls
Austin
La Crosse
Mason City
Sioux City
Ft Dodge
Cedar Falls
Waterloo
Ames
Marshalltown
Cedar Rapids
Des Moines
Iowa City
Clinton
Davenport
Rock Island
Omaha
Council Bluffs
Fremont
Ottumwa
Dubuque
Madison
Janesville
Beloit
Rockford
Freeport
Milwaukee
Waukesha
Racine
Kenosha
Waukegan
CHICAGO
Gary
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Valparaiso
Kankakee
South Bend
Elkhart
Mishawaka
Benton Harbor
Kalamazoo
Battle Creek
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Ann Arbor
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DETROIT
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Windsor
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Lansing
Flint
Port Huron
Sarnia
London
Grand Rapids
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Saginaw
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Fond du Lac
Oshkosh
Appleton
Green Bay
Manitowoc
Milwaukee
Toledo
Adrian
Fort Wayne
Tiffin
Akron
Cleveland
Euclid
Sandusky
Findlay
Timmins
Sault Ste Marie
Thunder Bay
Fort Arthur
Fort William
Nipigon Bay
Otter Head
Michipicoten Island
Grand Portage
Grand Marais
Duluth
Superior
Ashland
Washburn
Bayfield
Apostle Islands
Sand Island
Bark Point
Madeline Island
Ontonagon
Houghton
Hancock
Calumet
Marquette
Au Sable Point
Whitefish Point
Point Isabelle
Manitou Island
Traverse Point
Abbaye Point
Grand Island
Munising
Newberry
Trout Lake
Rapid River
Escanaba
Manistique
Seul Choix Point
Saint Ignace
Mackinac Island
Point Detour
Hannahville I R
Washington Island
North Manitou Island
Arbana
North Point
Harrisville
Au Sable Point
Lewis City
Burnt Cabin Point
Big Sable Point
Little Sable Point
Isabella
Mount Pleasant
Point Pelee
Kewaunee
Manistee
Cadillac
Menominee
Escanaba
Iron Mountain
Florence
Crivitz
Wausau
Rhinelander
Medford
Eagle River
Ironwood
Hurley
Lake Superior
Lake Michigan
Lake Huron
Lake Erie
Lake St Clair
Lake Nipigon
Lake of the Woods
Rainy Lake
Red Lake Ind Res
Nett Lake Ind Res
Leech Lake Ind Res
Fond du Lac Ind Res
Mille Lacs Ind Res
Lower Sioux Ind Res
Upper Sioux I R
Yellow Medicine I R
Winnebago I R
Omaha I R
Sac and Fox I R
Oneida Ind Res
Stockbridge Munsee I R
Lac Courte Oreilles I R
Lac du Flambeau I R
Keweenaw Bay Ind Res
Keweenaw Bay I R
Huron N W R
Michigan Islands N W R
Shiawassee N W R
Seney N W R
Upper Mississippi River Wildlife and Fish Refuge
Effigy Mounds Nat Mon
Pictured Rocks Nat Lakeshore
Isle Royale National Park
Grand Portage I R
Nett Lake I R
Red Lake Ind Res
Chippewa Ind Res
Lac Courte Oreilles Ind Res
Lac du Flambeau Ind Res
Menominee Ind Res
Stockbridge Munsee I R
Oneida Ind Res
Winnebago I R
Omaha I R
Sac and Fox I R
Upper Sioux I R
Lower Sioux Ind Res
Yellow Medicine

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THE PLANNING PROCESS

The Forest Service has developed a three-phase planning procedure that is designed to be dynamic and responsive to current and changing legislation, budget levels, National objectives, and public needs and concerns. The three phases are: an AREA GUIDE, a FOREST PLAN, and a UNIT PLAN.

The feedback process is an integral component of the planning process in all phases. It provides stimulus for plan modification as changes occur within the scope of each planning document.

It is essential that the process be viewed in its entirety. Each subsequent phase, although becoming more specific, is not independent of the others. The components of the process and the objectives of each phase follow.

AREA GUIDE

This document is the first step in the planning process. The basic objective of the GUIDE is to establish broad direction for planning and management of the natural resources present within the National Forests in the planning area. It defines latitudes of management for individual programs as well as establishes long-range resource output levels.

FOREST PLAN

This document, the second step in the planning process, is written within the framework of the GUIDE. The objective is to refine and apply broad management direction consistent with the characteristics and situation on each individual National Forest. This will include establishment of specific standards for Forest-wide practices, allocation of the Forest land to the various classifications of management outlined in the GUIDE, and establishment of boundaries for homogeneous units within the Forest.

UNIT PLAN

This document represents the final step in the planning process. A UNIT PLAN will be written for each homogeneous unit established in the FOREST PLAN. The UNIT PLAN will tell what, where, and how things will be done on that particular unit. It will incorporate the specific standards and direction given in the FOREST PLAN and will be based on a detailed resource inventory, including land capability. The plan will emphasize interdisciplinary planning and will include management activity schedules, financial needs, and manpower requirements.

Special area management plans will be incorporated in the unit planning process.

All land use plans are maintained on an annual basis and are completely redone every 10 years. The 10-year cycle may be shortened if the need arises.

Intensive public involvement is an integral part of each phase of planning. Significant amendments or updates to a land use plan will also involve additional public involvement.

FUNCTIONAL PLANS

Functional plans, such as timber management, wildlife, and recreation plans, will be coordinated within the overall direction of Forest Plans. Functional plans help establish current production and potential goals for planning units, yet functional plans are dependent upon land use plans for planning direction and basic land use allocations. Ordinarily, functional plans will cover individual National Forests, but fish and wildlife habitat management plans developed in cooperation with the individual States (as specified by P.L. 93-452) are coordinated at the State level.

Although the integration of functional plans into the land use planning process, as outlined above, is specified in Forest Service policies, it is recognized that there will be a transition phase to assure orderly integration. By the end of this planning period, it is expected the transition will be complete. Any provision of an approved functional plan which is inconsistent with a provision of a subsequently approved land use plan will simultaneously be modified at the time the land use plan is approved. The revised provision will become effective at the time of the land use plan approval.

THE NATIONAL FORESTS — GENERAL INFORMATION

NATIONAL FORESTS	DATE OF ESTABLISH-MENT	TOTAL ACRES WITHIN NAT'L FOREST BOUNDARY	NATIONAL FOREST SYSTEM LANDS	PERCENT OF NAT'L FOREST LAND WITHIN BNDRY.	FOREST LOCATIONS	SUPERVISOR'S OFFICE LOCATIONS	DISTRICT RANGER OFFICE LOCATIONS
CHEQUAMEGON	1933	1,049,236	839,598	80	Northwest Wisconsin	Park Falls, Wisconsin	Park Falls, Glidden, Medford, Hayward, Washburn
CHIPPEWA	1908	1,314,322	653,954	50	No. Central Minnesota	Cass Lake, Minnesota	Blackduck, Cass Lake, Deer River, Marcell, Walker
**HIAWATHA*							
Eastern Unit (Marquette NF)	1909*				East end Mich. U.P.	Escanaba, Michigan	Sault Ste. Marie, St. Ignace
		1,260,411	862,382	68			
Western Unit (Hiawatha NF)	1931*				Central Mich. U.P.		Manistique, Rapid River, Munising
***HURON-MANISTEE*							
Huron	1909**	691,444	418,844	61	Northeast Mich. L.P.	Cadillac, Michigan	Mio, Tawas, Harrisville
Manistee	1938**	1,314,906	493,548	38	Northwest Mich. L.P.		Baldwin, Cadillac, Manistee, White Cloud
		2,006,350	912,392	45			
NICOLET	1933	942,008	650,630	69	Northeast Wisconsin	Rhinelander, Wisconsin	Three Lakes, Eagle River, Florence, Lakewood, Laona
OTTAWA	1931	1,522,540	915,381	60	Western end Michigan's Upper Penin.	Ironwood, Michigan	Bessemer, Bergland, Ontonagon, Iron River, Kenton, Watersmeet
SUPERIOR	1909	3,022,657	2,055,018	68	Northeast Minnesota	Duluth, Minnesota	Aurora, Grand Marais, Ely, Isabella, Cook, Tofte, Two Harbors, Virginia
TOTAL		11,117,524	6,889,355	62			

**1962—combined the two Upper Peninsula Forests to Hiawatha N.F.*
***1945—combined the two Lower Peninsula Forests to Lower Michigan N.F.*
1964—name changed from Lower Michigan N.F. to Huron-Manistee N.F.

NATIONAL DIRECTION

The establishment and management of the National Forests are based on:

THE CREATIVE ACT OF 1891, which authorized the President to establish forest reserves from the public domain. President Harrison set aside 13 million acres under this Act, but there was no provision for administration. *THE ORGANIC ADMINISTRATION ACT OF 1897* provided for protection, management, and use of the forest reserves. *THE TRANSFER ACT OF 1905* transferred the forest reserves from the Department of Interior to the Department of Agriculture. *THE ACT OF MARCH 4, 1907,* renamed the forest reserves National Forests.

THE WEEKS LAW, ACT OF MARCH 1, 1911, authorized the purchase of lands for timber production and regulation of the flow of navigable streams. Most of the National Forests in the South and East were established under this law. This Act also provided for a program of Federal-State cooperation in fire protection.

THE MULTIPLE USE-SUSTAINED YIELD ACT OF 1960, which confirmed long-standing Forest Service policy to administer the National Forests for outdoor recreation, range, timber, watershed, wildlife, and fish purposes. It stressed that consideration be given relative values of resources in particular areas.

THE WILDERNESS ACT OF SEPTEMBER 3, 1964, as amended January 3, 1975, declared the policy of Congress to secure for the American people of present and future generations the benefits of an enduring resource of wilderness.

THE LAND AND WATER CONSERVATION FUND ACT OF SEPTEMBER 3, 1964. The purposes of this Act are to preserve, develop, and assure accessibility to quality and quantity of outdoor recreation resources as may be available and are necessary and desirable for individual active participation in such recreation and to strengthen the health and vitality of the citizens of the United States.

THE NATIONAL ENVIRONMENTAL POLICY ACT OF 1969 declared a National policy to encourage productive and enjoyable harmony between man and his environment. It provides a continuing policy for the Federal Government to cooperate with State and local governments and other concerned public agencies to promote the general welfare and to achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities.

THE ENDANGERED SPECIES ACT OF DECEMBER 28, 1973. The purpose of the Act is to provide a means to conserve ecosystems upon which endangered wildlife and plant species depend and to provide a program for the conservation of endangered and threatened species. The purposes of existing treaties and conventions are also emphasized by the Act.

THE FOREST AND RANGELAND RENEWABLE RESOURCES PLANNING ACT OF 1974 provides an orderly framework for assessing the supply of, and demand for, the Nation's forest and related resources. It also provides for the development of long-range plans to assure that the American people enjoy adequate supplies of water, recreation, forage, timber, and wildlife from the National Forest System and private forest lands in the decades ahead.

THE SIKES ACT OF OCTOBER 18, 1974 (P.L. 93-452) provides for conservation and rehabilitation of wildlife on certain public lands, including the National Forests. A provision of the Act provides for the cooperative development, with the States, of comprehensive plans for conservation and rehabilitation of wildlife, fish, and game.

In addition to other laws, executive orders, and regulations which apply to the National Forests, direction from the Congress and President is expressed through the appropriation process. As elected representatives of the people, the President and Congress provide guidance to the Forest Service by authorization of funds, public hearings, and committee reports.

Support activities involve programs which indirectly provide product and service outputs. These programs include transportation systems, land adjustments, fire management, and insect and disease control. Transportation systems are essential to make products and services available from the National Forests and for routine administration. Land adjustment (purchase and exchange) is needed on Lake States Forests to improve their ability to supply commodities and services, to improve management efficiency and to protect or rehabilitate certain critical resources.

Forest Service basic considerations as stated in the "Framework for the Future" are:

THE FOREST SERVICE HAS THE FEDERAL RESPONSIBILITY FOR NATIONAL LEADERSHIP IN FORESTRY.

National leadership includes top-level participation in setting National priorities, formulating programs, and establishing the pattern of Federal policies that relate to man and his natural environment. Effective leadership in forestry is an all-inclusive objective of the Forest Service.

FOREST SERVICE RESPONSIBILITIES AND INTERESTS GO BEYOND FOREST LANDS.

Forest and forest-related rangeland, grassland, brushland, alpine areas, minerals, water areas, and wildlife habitat illustrate the variety of natural resources involved in the scope of forestry. Forestry also involves less tangible values such as scenery, air and water quality, recreation, open space, environmental quality, economic strength, and social well-being. In the following objective and policy statements the terms 'forests' and 'forestry' are used in this broad sense.

IN OUR COMPLEX SOCIETY THERE MUST BE AN INTERRELATIONSHIP AMONG OBJECTIVES, POLICIES, AND GOALS.

Listed here are those objectives and illustrative policies and goals at each major level of the Forest Service orgnizational structure. The interrelationships among various objectives and policies must be an integral part of decisionmaking at all organizational levels, ranging from the most all-encompassing, long-range planning, to identification of specified targets of immediate concern.

The following objectives identify the general scope and character of the role the Forest Service should play in the society of today and tomorrow. It provides a new "framework" to help guide our thinking and decision-making through the Service.

PROMOTE AND ACHIEVE A PATTERN OF NATURAL RESOURCE USES THAT WILL BEST MEET THE NEEDS OF PEOPLE NOW AND IN THE FUTURE.

PROTECT AND IMPROVE THE QUALITY OF AIR, WATER, SOIL, AND NATURAL BEAUTY.

HELP PROTECT AND IMPROVE THE QUALITY OF THE OPEN SPACE ENVIRONMENT IN URBAN AND COMMUNITY AREAS.

GENERATE FORESTRY OPPORTUNITIES TO ACCELERATE RURAL COMMUNITY GROWTH.

ENCOURAGE THE GROWTH AND DEVELOPMENT OF FORESTRY-BASED ENTERPRISES THAT READILY RESPOND TO CONSUMERS' CHANGING NEEDS.

SEEK OPTIMUM FOREST LANDOWNERSHIP PATTERNS.

IMPROVE THE WELFARE OF UNDERPRIVILEGED MEMBERS OF SOCIETY.

INVOLVE THE PUBLIC IN FORESTRY POLICY AND PROGRAM FORMULATION.

ENCOURAGE THE DEVELOPMENT OF FORESTRY THROUGHOUT THE WORLD.

EXPAND PUBLIC UNDERSTANDING OF ENVIRONMENTAL CONSERVATION.

DEVELOP AND MAKE AVAILABLE A FIRM SCIENTIFIC BASE FOR THE ADVANCEMENT OF FORESTRY.

LAKE STATES AREA MANAGEMENT DIRECTION

The term "management," as used in this guide, encompasses a broad range of purposeful decisions, intended to accomplish given objectives, ranging from an absolute prohibition of interference by man with natural processes (preservation of natural areas), to total control of them by man (laboratory research). Planned action and planned inaction are both management if the action or inaction is chosen to achieve an objective in an efficient and/or effective manner. Resources may be managed for the production of goods and services, for protection from any impact, or for a combination of both. Management usually, but not always, involves some human manipulation intended to channel natural processes toward the ends desired by man.

Management direction for the Lake States National Forests is presented in three activity categories: (1) National Forest Administrative Activities, (2) National Forest Production Activities, (3) National Forest Support Activities. Each category is divided into various subject areas with each subject area discussed in four sections. The four sections under each subject area are titled and defined as follows:

Situation

The situation depicts the current and forecasted trends of supply and demand for the resources of the Lake States National Forests. It provides a basis for determining management direction for these National Forests. Data presented in the situation statement were gathered from past studies and reports, and in many instances encompass all land in the planning area and are not limited to National Forest land.

Assumptions

Assumptions are predictions based on the best available information of what might occur in the future that could affect National Forest management.

Goals

Goals state the desired end results expected through planned management activity. They are consistent with National direction and are based on public needs and land capability.

Policies

Policies articulate the methods to accomplish stated goals.

MANAGEMENT DIRECTION FOR FORESTS' ADMINISTRATIVE ACTIVITIES

Administration involves those activities which do not directly produce goods or services or which cannot be easily assigned to the production of goods and services. Included are programs which involve the stewardship of natural, social and economic resources, energy conservation, land uses, information and inventory systems, intergovernmental cooperation, and people and property protection. These programs are all essential parts of National Forest management.

ENERGY CONSERVATION

Situation

The use of energy is one of the most significant factors in the American economy. For example, in 1972 each American used 2,750 pounds of forest products; 1,340 pounds of metals; and 17,800 pounds of fossil fuels.

Oil is the single largest source of fossil fuel energy. At present, we import about 22 percent of our need. It is projected that by the year 2000, oil imports will supply 58 percent of our needs. The cost of these imports has been variously estimated at between $30 billion to $70 billion annually. These projected costs have aroused interest in determining alternate supplies of domestic energy and energy conservation measures.

Wood is a renewable resource. In a world of finite resources, this is a very important factor. Wood has its most significant potential as a major conserver of energy. The conversion of wood into a useful product takes considerably less energy than most other materials that are often used in place of wood. For example, the energy required to produce lumber for house framing takes only one-third the energy needed to process steel for the same purpose. As the cost of energy increases as a major production factor, the economic position of wood will improve. This could result in increased pressure for more wood production.

Projections of future wood demand as indicated in this Guide have not taken into account the effects of the long-term energy shortage. Forceful energy conservation measures will have to be taken. The use of wood as a major energy conserver will accelerate beyond present projections.

Assumptions

a. Logging will not be curtailed because of the energy shortage.

b. The demand for motorized forms of outdoor recreation will increase less rapidly than earlier anticipated.

c. Energy conservation will have some direct impact upon wood demand during the next decade.

d. There is a very great potential for a major impact upon wood demand at some point in the future. Preparation for this impact will require action during this planning period.

e. Commercial chemical fertilizers will be in greater demand for. protein food production. Cellulose production will be lower in priority for fertilizer use than in landscaping, soil stabilization, reforestation, and revegetation.

Goal

Manage the National Forests so as to conserve their nonrenewable energy resources.

Policies

a. The most efficient use of energy will be selected if adequate or comparable results can be obtained at reasonable costs.

b. When alternative choices are available, comparable manufactured materials that have the lowest energy input will be selected. The energy input in maintenance will be a consideration.

c. Encourage the use of energy-efficient transportation systems, such as railroads, pipelines, and water for transportation of forest products.

d. Energy economy in building design, both in materials and heating, will have a high priority.

e. Energy use should be considered in the location of work centers and personnel.

f. All other factors being equal, materials used should be those with least impact on petroleum reserves.

g. Limit the use of commercial chemical fertilizers and favor the use of natural organic fertilizers in all activities.

h. Accelerate efforts to utilize sludge, vault waste, compost and other organic wastes to provide nutrients for cellulose production.

INTERGOVERNMENTAL COOPERATION

Situation

The State and Private Forestry Program of the Forest Service is charged with the general responsibility of Federal-State cooperative efforts in forestry at the State level. The National Forests devote themselves to cooperation at the local level in such areas as fire control, law enforcement, and land use planning.

Cooperative Federal-State programs enable State, local, county, municipal, and privately owned forest land to help meet the forestry goals of the Nation. Federal efforts are rooted to the long established principle of cooperation with States, which have the assigned role of implementing programs. The Forest Service provides financial and technical assistance to the States for the development, protection, and utilization of non-Federal forest resources. It also provides professional forestry advice and assistance to other Federal landholding agencies that do not have their own forest management and research facilities. (See the State and Private Forestry Section for more information.)

Assumption

Increasing emphasis on regional land use planning will require participation by the Forest Service.

Goals

a. Achieve and maintain a cooperative approach with other Federal agencies, States, counties, and the private sector to develop land use management plans.

b. Establish identity of the National Forests as cooperative participants in economic, social, environmental education and rural area development programs.

Policies

a. Encourage improved land use management practices on private lands.

b. Cooperate in testing, development, and demonstration of improved forestry oriented equipment for use in the Lake States Area to assist in area development.

c. Coordinate National Forest land management activities with local planning and development efforts.

d. Cooperate and coordinate with the respective States in providing input for the development of land and water use programs within Coastal Zone Management Areas. Forests shall conduct their management activities in a manner consistent with approved State management programs to the maximum extent practical in these areas.

e. Cooperate with planned regional development of solid waste disposal systems.

f. Encourage the implementation of zoning ordinances to regulate undesirable activities.

INVENTORY AND INFORMATION SYSTEMS

Situation

The increasing complexity of forest land management coupled with the increasing amount of land management information available requires that new techniques in information management be developed. Computers are being utilized for data storage and retrieval. Retrieval systems are being refined to provide more precise information to help the forest land manager.

To discharge these planning and stewardship responsibilities, the land manager must ascertain what the land is capable of providing and what management techniques are available to secure that objective. Public needs and expectations for that land must also be projected. Successful accomplishment depends upon the ability to inventory the essential information, store it in a readily available form, and retrieve it in a manner that provides meaningful analysis.

Assumption

The need for management information will increase along with the speed of retrieval.

Goals

a. Provide the integrated inventory and information systems to determine and predict needs and demands affecting the Lake States National Forests and to accurately determine the capability of those Forests.

b. Provide systems which will efficiently and economically integrate information of the forest environment to assist in identifying and evaluating resource management alternatives.

c. Inventory and information systems will be compatible.

Policies

a. Land managers will keep abreast of the latest technological and social advances related to land management.

b. Forest Supervisors should consider installing information retrieval systems for off-Forest produced information.

c. Management will assure a cost/benefit analysis is made before adopting any management information system.

d. Inventories will be designed to become a part of, or to allow integration with, Compartment Examination (COMPEX) data to form a data base to be used in land use planning.

LAND USE

Situation

There are a variety of uses of National Forest lands which are authorized through various documents such as easements, special use permits, and other formal agreements.

During the early years of the National Forests' development, the resource demands were less significant, and permits and easements were issued with minimal conflicts. However, with today's life style becoming more affluent and mobile, the need for these public lands and their valuable resources may be in greater demand than can be supplied. For this reason, it is necessary to evaluate existing land use programs and make certain that the National Forest lands are being utilized to best serve the long-term public interest.

Assumptions

a. As the private lands within the National Forest boundaries become more developed, there will be increased demand for special use permits for access roads, powerlines, etc.

b. There will be increasing public pressure to prevent devoting National Forest lands to an exclusive private use.

Goal

Permit only those land uses which are compatible with and contribute to National Forest objectives.

Policies

a. In general, permits will only be issued for uses that could not be provided by other lands with the same degree of environmental protection.

b. Existing land uses will be analyzed.

(1) Uses incompatible with the established goals of the planning unit will be phased out at the earliest possible date.

(2) Utility corridors will be established. Whenever possible, these should be located where utilities presently exist.

c. Permits for residences may only be issued as a temporary administrative procedure for trespass. Reissuing permits for existing approved summer home tracts may be continued.

d. All permits will be for the minimum land area necessary for the particular use.

e. Use of the permit area by other than the permittee will be accommodated wherever it does not conflict with the purpose of the permit.

f. Whenever technically feasible, telephone lines and powerlines less than 34.5 kV will be buried unless investigation shows that this is not in the public interest or environmentally sound.

g. Merchantable timber cleared from permit areas will be utilized under current timber sale regulations.

h. A land use proposal involving more than one administrative unit will have one common environmental analysis.

i. The conflict of noise pollution will be considered in determining the acceptability or location of a proposed land use.

j. Land use applicants can be required to bear the cost of environmental studies associated with proposals of potentially significant environmental impact.

PEOPLE AND PROPERTY PROTECTION

Situation

Protection of National Forest users and property has always been a significant task for National Forest managers. This includes protecting the land and its resources against abuses from the forest user and providing for the safety of the forest user from the forest environment. In addition, this area includes protection of the forest user from offenses of other users. In the past, efforts have been primarily directed toward resource protection and the protection of the user from the environment. The job of protecting people from offenses of others has traditionally been left largely to State and local authorities. In recent years, greatly increased public use of the National Forests has drastically raised the law enforcement needs on the National Forests.

management direction for forests'administrative activities

The cooperative efforts of State and local law enforcement agencies were strengthened with the passage of Public Law 92-82, the Cooperative Law Enforcement Act. This Act enables the Forest Service to reimburse local agencies for costs incurred in enforcing State and local laws and ordinances on National Forest lands. This has enabled the National Forests to enter into cooperative agreements to intensify local law enforcement activity in areas of concentrated public use. These agreements are major tools of law enforcement on public lands, but they do not decrease the Forest Service's responsibility to also enforce Federal laws and the Secretary's Regulations.

The Forest Service has responsibility for the enforcement of laws and regulations dealing with damages to resources and some crimes against property and people occurring on National Forest lands.

The Federal Magistrate System provides Federal Magistrates to try petty offenses that have taken place on National Forest lands. Collateral forteiture rules have been instituted. These rules establish fines for specific violations and permit violators to pay the fine by mail if they choose not to appear before the Magistrate.

Assumptions

a. Use of the National Forests will continue to increase accompanied by the increase in offenses.

b. The Forest user expects a reasonable level of protection on the National Forests.

c. As use of the National Forests continues to increase, there will be a tendency for a proportionate increase in the number of forest users' accidents associated with the forest environment.

Goals

a. Provide the National Forest user with a sense of security and freedom from harassment by others.

b. With respect to the hazards of the forest environment, provide for adequate safety of the forest user.

c. Produce an effective program for the prevention of violations of laws and regulations by developing public understanding and support.

Policies

a. The National Forest law enforcement program will be a cooperative effort between Federal, State and local authorities.

b. All Forest Service employees and contractors who deal with the public will be fully aware of how to get law enforcement and emergency help.

c. Particularly in areas of concentrated use, provisions should be made to alert users on how to obtain law enforcement help.

d. The Forest Service will assume a major responsibility for the safety of the forest users at developed National Forest areas.

e. The Forest Service will adapt the posture that the forest user must shoulder major responsibility for his own safety and welfare in general undeveloped forest areas. The Forest Service will assist the user with this responsibility through public education and information.

f. As necessary, negotiate memorandums of understanding with sheriff's departments or other State or local agencies having the responsibility of search and rescue under State law.

g. Improve the extent and quality of present coverage under Cooperative Law Enforcement Agreements.

h. Strengthen cooperative relationships with other law enforcement agencies by carrying out the Forest Service's share of the law enforcement workload.

i. Improve the In-Service law enforcement capabilities of each National Forest.

j. Promote a mutual understanding of Federal offenses on National Forest lands through communications with magistrates.

SPECIAL AREAS

Situation

All three of the Lake States have legislated wild and scenic river systems which complement the National Wild and Scenic Rivers Act (P.L. 90-452). Several rivers mentioned in both kinds of legislation are near or in the National Forests. The Boundary Waters Canoe Area is unique in the National Wilderness Preservation System because it is the only National canoe area within the system. The Wilderness Act, as amended, created one new wilderness area and identified four wilderness study areas within the Lake States.

The National Trail System Act helped focus attention on the values of trails and the need for increased action in making trail opportunities available. The proposed North Country Trail passes through Michigan, Wisconsin, and Minnesota. This trail begins in Vermont and connects with the Lewis and Clark Trail in North Dakota. Segments of this trail have been completed and are being used.

The areas on the following page are presently designated as special areas by virtue of law, executive order, regulation, or policy. For protective purposes, certain special areas, such as archeological and biological areas are not listed.

Assumptions

a. Additional special areas will be inventoried, evaluated, and established.

b. Demand for areas providing solitude will remain at a high level.

Goals

a. Protect areas with particularly significant wilderness, geological, historical, scientific, or vegetative interest.

b. Administer lands currently classified as "special" by Congress, Secretary of Agriculture, Forest Service Chief, Regional Forester, or Forest Supervisor.

Policies

a. Administer identified "special areas" according to approved management plans for the areas.

b. As future inventories and land use planning are carried out, locate, identify, and take measures necessary to insure protection of, unique ecosystems. Locations will not be publicized if protection cannot be assured.

c. Areas designated for study by law or by Forest Service procedures, including wilderness, will be protected from development and other impacts that would degrade the values for which the area is being studied until a final decision is made.

d. Areas with potentially significant geological, biological, archeological, wilderness, historical, paleontological, cultural, or scenic values will be identified and evaluated. Locations will not be publicized if protection cannot be assured. Provisions for management will be made in Forest or Unit Plans.

(1) Cooperative agreements with nonprofit organizations will be explored to protect these features.

(2) Those areas having particular conditions of unique public significance shall be evaluated for "special area" classification.

FOREST	SPECIAL AREA	ACREAGE
CHEQUAMEGON	Moquah Barrens Research Natural Area	640
	Rainbow Lake 1/	6,600
	Flynn Lake 2/	6,300
	Round Lake 2/	4,200
	Segment of North Country Trail, 59 miles	
	Namekagen River, 3 miles	
CHIPPEWA	Upper Mississippi River 4/	
	Cutfoot Experimental Forest	3,106
	Marcell Experimental Forest	2,287
	Pike Bay Experimental Forest	3,580
	Pine Point Research Natural Area	1,239
	Sunken Lake Research Natural Area 5/	640
	Red Oak Research Natural Area 5/	12
	Segment of North Country Trail, 34 miles	
HIAWATHA	Rock River Canyon 2/	5,400
	Upper Peninsula Experimental Forest	10,917
	Dukes Research Natural Area	283
	Grand Island Research Natural Area 5/	24
	Rock River Research Natural Area 5/	80
	Government Island	214
	Round Island Scenic Area	378
	Big Island Lakes Area	6,600
	Segment of North Country Trail, 74 miles	
	National Forest Great Lakes Shoreline, 64 miles	
	Total Great Lakes Shoreline within National Forest, 170 miles	
HURON	Kirtland's Warbler Management Area	4,010
	Au Sable River 3/	
	National Forest Great Lakes Shoreline, 1 mile	
	Total Great Lakes Shoreline within National Forest, 15-1/2 miles	
MANISTEE	Manistee River 3/	
	Pere Marquette River 3/	
	Newaygo Experimental Forest 6/	638
	Pine River Experimental Forest	2,781
	Udell Experimental Forest 5/	3,845
	Segment of North Country Trail, 86 miles	
	National Forest Great Lakes Shoreline, 3 miles	
	Total Great Lakes Shoreline within National Forest, 9 miles	
NICOLET	Argonne Experimental Forest	6,570
	Scott/Schelp Lakes Research Natural Area 5/	266
	Bose Lake Research Natural Area and State Scientific Area 5/	30
	Mile Post Zero-Treaty Tree Historic Site	1
	Pine and Popple State Wild Rivers	
	Giant Pine Grove State Scientific Area	23
OTTAWA	Sylvania	14,890
	Sturgeon River Gorge 2/	13,200
	McCormick Experimental Forest	17,164
	National Forest Great Lakes Shoreline, 3/4 mile	
	Total Great Lakes Shoreline within National Forest, 15 miles	
SUPERIOR	Boundary Waters Canoe Area	1,029,689
	Keeley Creek Research Natural Area	640
	Lac La Croix Research Natural Area	973
	Schroeder Research Natural Area	40
	National Forest Great Lakes Shoreline, 1 mile	
	Total Great Lakes Shoreline within National Forest, 40 miles	

1/ Instant Wilderness
2/ Wilderness Study Area
3/ Potential candidates for inclusion in Wild and Scenic Rivers System
4/ Same as 3/, except the Bureau of Outdoor Recreation is the lead agency in the study
5/ Research Natural Areas under consideration
6/ Presently being studied to determine need for this area

STEWARDSHIP

Stewardship includes the protection or rehabilitation of the ecological, economic and social environments. In the case of the National Forests, stewardship assures the benefits of land and its resources for the use and enjoyment of present and future generations.

The National Environmental Policy Act of 1969 (NEPA) expresses the Nation's concern for protection of the environment. A key element of NEPA requires analysis of the total impacts of major Federal projects prior to implementation. In addition to displaying monetary costs and benefits, the responsible Federal agency is charged with the task of analyzing the less tangible costs and benefits, such as the impact of a given project upon man's senses. Quantitative expressions of these intangible benefits are elusive. Early interpretations of NEPA tended to arrive at a MAN VERSUS NATURE adversary position on project proposals. They are now evolving more to a MAN WITH NATURE position.

All forest land management activities and programs have an effect upon the local economy. For example, production of every million board feet of timber requires 25 workers for primary manufacturing and 50 for secondary manufacturing, as well as other economic attendant activities. By 1985, the timber harvesting programs on the Lake States National Forests should increase employment by 10,000 people. The benefits from other Forest Service activities, such as recreation programs, can also create major economic impacts.

Although primarily an agency which manages land and its resources, the Forest Service is suited to handle certain social programs. This is particularly true in rural areas. The various manpower programs the Forest Service administers or participates in with other levels of government are devoted to the development and employment of people, as well as the improvement and conservation of America's natural resources.

For example, the Forest Service participates in general cooperative manpower programs authorized by the Economic Opportunity Act of 1964. Under an agreement with the Department of Labor, the Forest Service operates Job Corps Civilian Conservation Centers to provide basic education and job training to disadvantaged youth. Other such cooperative work training programs in which the Forest Service participates are Operation Mainstream for older Americans, Neighborhood Youth Corps for young people, College Work Study, and special training programs under the Manpower Development and Training Act.

In 1971, the Forest Service, in cooperation with the Department of Interior, initiated a Youth Conservation Program. This program accomplishes needed conservation work on Federal land administered by the Secretaries of Agriculture and Interior. It also provides young men and women throughout American society with the opportunity to learn about their natural environment through actual field experience. Since FY 1974, there has been a comparable program on State-owned lands.

The National Forests have been utilized to provide employment under emergency social programs such as the Civilian Conservation Corps of the 1930's and the Accelerated Public Works Programs of the early 1960's. Opportunities exist to coordinate management activities so they do not compete with self-sustaining business activities of rural minorities such as Indians as well as to accommodate the special needs of elderly and handicapped.

Assumptions

a. Procedural requirements of environmental protection legislation will reduce the Forest Service's flexibility in providing a timely response to emergency employment programs.

b. Public interest in National Forest management will intensify.

c. Environmental protection legislation will reduce Forest Service flexibility in setting and in implementing management policies.

management direction for forests'administrative activities

Goals

a. Produce National Forest goods and services on a sustained-yield basis without impairing, beyond acceptable standards, the quality of the air and water and the productivity of the soil.

b. Participate fully in appropriate programs to improve the welfare of underprivileged members of our society.

c. Increase public understanding of sound resource management.

d. Protect and preserve endangered and threatened species as well as important historical and archeological sites.

Policies

a. Past activities not meeting environmental guidelines will have top priority for corrective actions.

b. Management activities having potential for environmental degradation will be monitored. Intensity of monitoring will depend on the potential magnitude and longevity of the degradation.

c. National Forest lands will not be used for waste disposal if more suitable non-National Forest lands are available.

d. Waste generated by National Forest use will be disposed of in environmentally safe waste disposal facilities.

e. Appropriate landscape management techniques will be incorporated into resource management activities.

f. Identify and protect lands and features which have unique geological, biological, archeological, historical, paleontological, wilderness, cultural, or scenic values; and explore the use of cooperative agreements with nonprofit organizations to protect these features.

g. Be continuously alert for opportunities to accommodate applicable social, environmental, educational and manpower programs into National Forest programs.

h. Identify, protect, and enhance, through management, threatened and endangered plant and animal species recognized in State and National lists. Specific protection areas of critical habitat will be identified and their protection implemented.

i. The physical needs of the elderly and handicapped will be considered in the design of forest recreational user facilities, such as picnic areas, fishing sites, scenic overlooks, etc.

j. No unit plan will be complete until a soils inventory has identified "problem" soils that could limit management alternatives.

k. Public resource management education will be carried out through information, involvement, and environmental education programs.

MANAGEMENT DIRECTION FOR FORESTS' PRODUCTION ACTIVITIES

Forest products are those items that most people associate with a forest. They include wood, water, wildlife, etc. The production of commodity items, such as wood, can be easily measured in terms of production units or dollars. Service items, such as recreation, are difficult to measure in terms of production units or dollars. Consequently, their target outputs tend to be less exact than those for commodity items.

FISH AND WILDLIFE

Situation

Such unrelated animals as the Canada jay and the Carolina chickadee, whitefish and large-mouth bass, fisher and fox squirrel find their habitat on the National Forests in the Lakes States. This reflects the remarkable variety found in wildlife communities throughout the planning area, which is sandwiched between the southern limits of the spruce-fir forest zone and the northern limits of the oak-hickory forest zone.

Within the planning area, the only breeding ground in the world for the Kirtland warbler is found, and timber wolves retain their last hold on a viable existence in the lower 48 States. The most important breeding ranges remaining in the Lake States for the bald eagle and osprey, and eastern population of greater sandhill crane are located on the National Forests in the Lake States. More spruce-fir zone animals are found in Michigan, Minnesota, and Wisconsin than anywhere else in this latitude. They include marten, fisher, lynx, spruce grouse, Canada jay, pigeon hawk, boreal owl, deer, black bear, and a host of nesting warblers. In the waters of this planning area are found whitefish, trout, walleye, northern pike, and numerous other species.

Formerly, there was a different variety of animal species on the National Forests in the Lake States. The disappearance of such species as wolverine, elk, woodland caribou, and grayling reflects a changed environment.

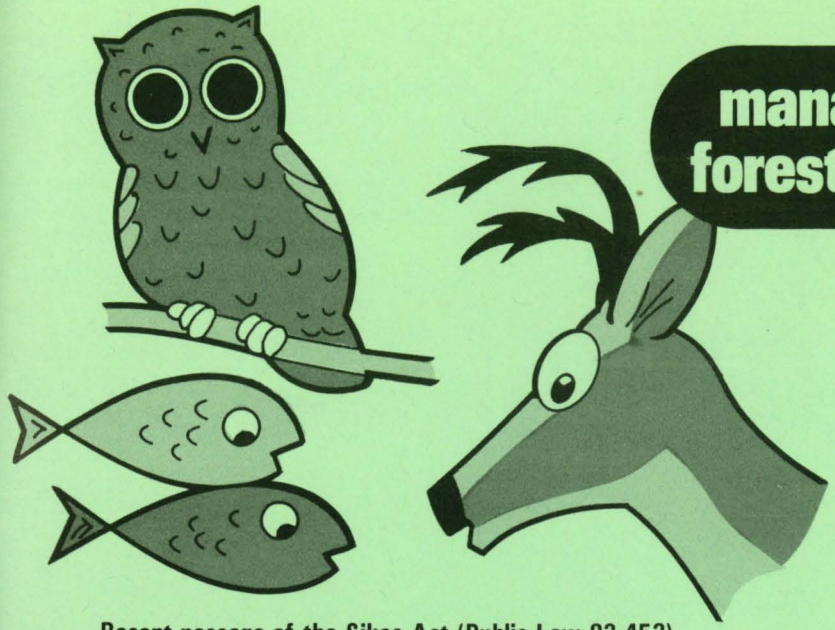
The economic and social values of fish and wildlife are obvious; the nonconsumptive values are less obvious but also important. Migratory species contribute ecologically and economically to wildlife communities outside the Lakes States.

To manage fish habitat so as to provide desired species in predetermined amounts, success is dependent upon water quality, availability of such features of habitat as spawning beds, and regulation of harvest. Consequently, intensive fisheries habitat management in cooperation with State harvest regulations becomes more pressing to accommodate increasing demands for sport fishing and possible commercial fishing. Fish and wildlife cannot be completely evaluated in monetary terms of aesthetics and human enjoyment.

The habitat needs of each species of fish and wildlife differ from those of others. The number of home ranges and the population of each species are governed by forest types, species composition, successional stages, interspersion of timber stands, aquatic vegetation, and other variables.

Studies are now underway to develop new protein products from unutilized fish. Fish population management on selected lakes and streams can be directed toward harvest of rough fish, since existing data indicate population imbalances now exist. The nature of Forest Service involvement in this program is currently undetermined. Worldwide food shortages make this an important program for study.

management direction for forests' production activities



Recent passage of the Sikes Act (Public Law 93-452) directs the Forest Service to consult with respective State agencies in developing and implementing comprehensive fish and wildlife programs for the National Forests. Each comprehensive plan will be consistent with overall land use plans for the lands involved.

Assumptions

a. Nonconsumptive wildlife uses will increase at a faster rate than consumptive uses.

b. National Forest users will expect representation of indigenous wildlife species.

c. Worldwide food shortages may refocus many fish and wildlife management programs, including management of fish populations in lakes with access controlled by National Forest management.

d. Hunting and fishing will continue to be a legitimate and substantial National Forest use.

Goals

a. Protect threatened and endangered species and their habitats.

b. Manage the habitat to provide optimum fish and wildlife populations, consistent with the attainment of other resource objectives.

c. Coordinate with other Federal agencies, States and universities in the evaluation of protein production potential from lakes within the Lakes States National Forests.

d. Cooperate with the Departments of Natural Resources of the States of Michigan, Wisconsin, and Minnesota to coordinate the management of habitat with the harvest or regulation of animals.

Policies

a. Meet the habitat requirements of wildlife species, incorporating the concept of diversity.

b. Permanent forest openings have value to wildlife and other resources as a vegetative type and will be included in land use planning.

c. Study the possibility of reintroducing extirpated species.

d. Management will emphasize natural rather than artificial habitat conditions.

e. Retain sufficient lakeshore in an undeveloped state to help insure protection of the quality of the aquatic and aesthetic environment.

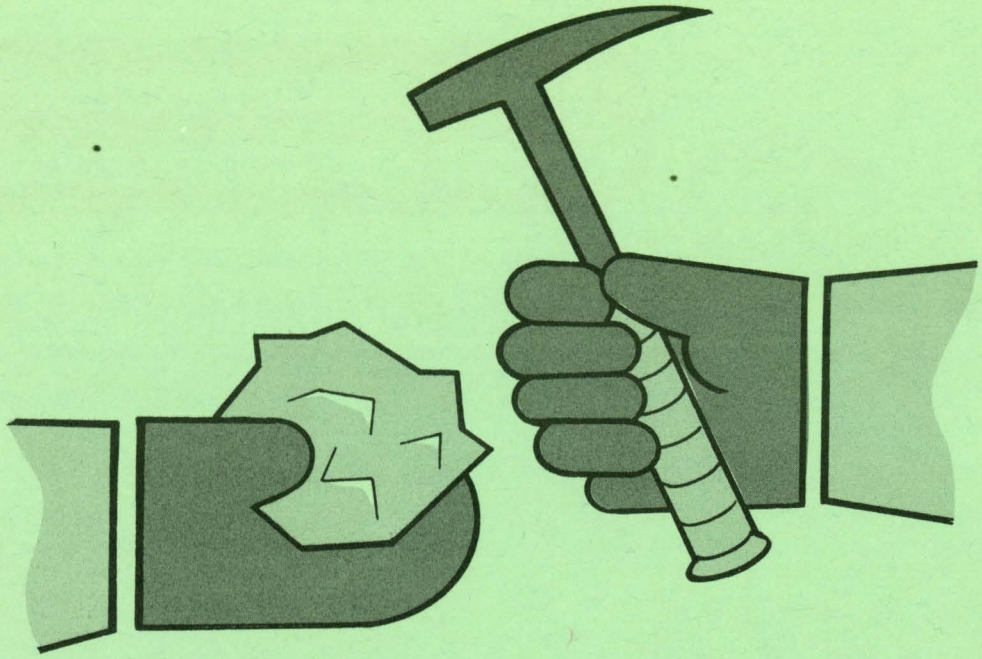
f. Sufficient areas of vegetative types which are considered critical elements for a species survival will be provided.

g. Manage winter "deer-range" habitat to provide for optimum carrying capacity consistent with other resource considerations.

h. Define levels of important fish and wildlife populations which can be expected in various ecosystems.

i. Develop comprehensive plans in consultation with State agencies for the conservation and rehabilitation of fish and wildlife on National Forest lands in accordance with Public Law 93-452.

j. Support hunting as an effective resource management tool.



MINERALS

Situation

Historically, mining has been a significant industry in the Lake States Area. The iron ore mining done in the area accounts for 98 percent of iron ore produced in the United States. Copper, an important mineral, accounts for 6 percent of the total production in the United States; its importance obviously has been overshadowed by discoveries elsewhere. Along with these minerals, the Lake States also produce sand and gravel, stone, peat, lime, and some oil and natural gas.

Nearly every National Forest already has a known potential for significant mineral activity impinging on it. Furthermore, there are intensive mineral surveys underway which may reveal greater potential.

Much of the lands in the Lake States National Forests were purchased from private individuals who reserved their mineral rights. Consequently, most of the significant mineral deposits in these National Forests are owned by private individuals. The rights the Forest Service has to affect mineral development on such areas depends directly on the wording of deeds with these individuals. Each case is unique. There also are tracts of non-Federal lands within or adjacent to the National Forests that have mineral potential.

In recent years, development of domestic mineral resources has not kept pace with national demand. The increasing gap in production has been met by increasing imports. However, rising prices and improved technology have caused the mining industry to again examine the large reserves of copper-nickel ore that lie within the Lake States. They are the largest known in the United States and lie entirely within or adjacent to National Forests.

The expected upsurge in minerals and energy activity will require intensive effort to protect the environment of the Lake States and its National Forests.

management direction for forests' production activities

Assumptions

a. Mineral development will increase at an accelerating pace, which will increase the potential for severe local problems in water supply, environmental degradation, etc.

b. A majority of the public will expect a maximum effort on environmental protection measures relative to all mining operations.

c. New mineral developments will open in areas that currently have no activity.

d. Mineral sources previously considered to be submarginal will become marketable.

Goals

a. Within existing laws, integrate the development and use of mineral resources with full consideration of all other resource values.

b. Concurrently with mineral extraction, restore the site to a condition which either closely resembles its original state or which has a productive capacity that meets resource objectives for the area.

Policies

a. Where mineral rights are owned by a third party, encourage the party to consider other resource values to the fullest extent possible during exploration and development of the mineral resource.

b. Where minerals are reserved subject to Rules and Regulations of the Secretary of Agriculture, apply these rules and regulations to permit the development of the mineral resource while at the same time minimizing any adverse impact on the environment.

c. Where the Forest Service controls the mineral rights, recommendations to the Bureau of Land Management for issuance of a prospecting and/or mining permit will include stipulations which provide for adequate protection of the environment.

d. Sand and gravel will be made available to local, State and other Federal units of government except where these materials are in short supply and they are needed for National Forest purposes.

e. Sand and gravel will be made available for private purposes only after governmental needs are met.

f. An operating plan for mineral development will be required.

g. Priorities for the restoration of existing depleted mineral sites will be commensurate with the degree of environmental degradation.

h. Mineral rights will be purchased when costs are commensurate with the threat to the resource and administrative values to be protected.

OUTDOOR RECREATION

Situation

Michigan, Minnesota, and Wisconsin offer a broad spectrum of recreation activities. Within these States is found an abundance of surface water, wilderness, Great Lakes shoreline, scenic beauty, a variety of plants and animals, and the beauties of changing seasons.

Private industry traditionally assumed a significant role in the development of outdoor recreational facilities in these States. These include family owned and operated cabins and resorts, corporation managed hotel chains, providers of recreation facilities, manufacturers of recreation equipment and winter sports areas. Private campgrounds are increasing at a rapid rate, and franchised systems of campgrounds are widespread. These developments represent a great economic factor in the Lake States Area.

An important recreation attraction of the Lake States National Forests is the multitude of lakes and streams of all sizes.

Trails are in great demand by a variety of both motorized and nonmotorized users.

Growing conflicts exist between recreation users who pursue different activities on the same area, e.g. motorized vs. nonmotorized use. These conflicts intensify with the increase in available leisure time and are compounded by a relatively finite land base available for outdoor recreation. Satisfactory solutions to much of the conflict have yet to be found. Recreation use, even in dispersed areas, does result in adverse environmental impacts.

Assumptions

a. Demand for all types of outdoor recreation will increase.

b. The greatest increase in outdoor recreation demand will be dispersed recreation.

c. Recreation facilities requiring intensive development can be operated at a profit by private industry if proper sites are available.

d. National Forests within the planning area are expected to experience an increase in recreation visitor days (RVD's) from 10,315,000 RVD's in 1970 to 13,015,000 RVD's in 1985.

e. Energy scarcity will result in longer and more numerous visits to Lake States National Forests because they offer a much closer alternative to those traditionally using recreation areas in western States.

Goal

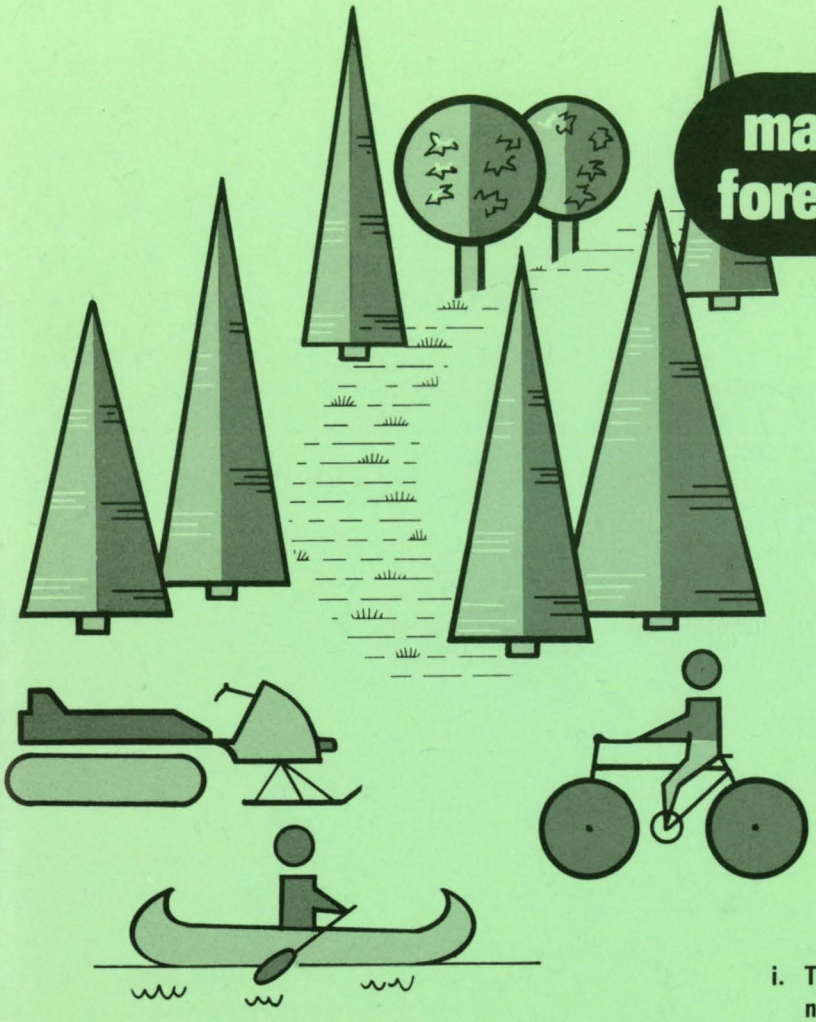
Provide a fair share proportion of the varied recreational experiences appropriate to National Forest land.

Policies

a. The National Forests will encourage, cooperate, and avoid competing with private industry or other public agencies in providing new, highly developed recreation facilities.

b. Existing uncompleted National Forest highly developed recreational facilities will be completed to achieve optimum site utilization.

management direction for forests' production activities



c. Lakeshore development should be restricted to those lakes, or portions thereof, that can support facilities with acceptable environmental impact.

d. Underutilized and/or high-cost recreation facilities, which do not offer a better than average recreation experience, should be evaluated for closure. Forest Supervisors will perform indicated closure(s).

e. Forest Plans will establish criteria for the protection of undeveloped lakes and rivers.

f. Regulations to control motor vehicle access to lakes will be established as needed in Forest or Unit Plans.

g. The design and management of facilities (roads, trails, buildings, etc.) should be coordinated with the recreation experience level selected for the particular area.

h. New downhill skiing facilities on National Forest land may be constructed provided the environmental procedures support such a project.

i. Trails will be planned and developed to meet the needs of a variety of users. Where possible, trail development should be designed to allow compatible uses on the same trail (e.g. horses during the summer, snowshoeing during the winter).

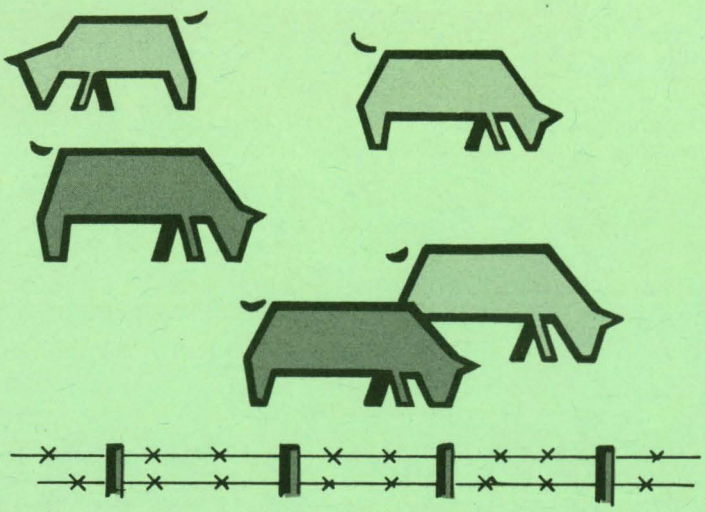
j. Where conflicting uses (e.g. cross country skiing/snowmobiling) occur during the same season, trails will be designed for, and use limited to, a specified use.

k. A limited number of bicycle trails should be constructed to test the demand for this type of forest recreation.

l. Each Forest within the Lake States will provide trails and/or areas where off-road vehicles are allowed.

m. Where refuse facilities are not provided, a carry-in/carry-out policy should be considered.

n. Visitor information services should be provided in a fashion which responds to the forest users' interest in, and desires for, interpretation of the local environment and to their need for knowledge about nearby recreation opportunities.



RANGE

Situation

Grazing of livestock is a minor activity on National Forest lands in the Lake States. In 1973, 750 animal unit months of grazing were authorized under special use permit.

The northern portion of the Lake States is characterized by extensive periods of cold weather and short growing seasons. This makes supplemental feeding of livestock necessary for 6 to 8 months of the year. Much of the supplemental feed is provided by hay and silage crops raised on the livestock producer's farm.

Opportunities are available to expand the use of existing forest range resources, as well as develop potential resources. Such opportunities include old farmsteads, permanent openings, and a future acquisition of open lands.

Assumptions

a. The Nation's demand for red meat production will increase. The major portion of this production will be derived from forage rather than feed grains and other supplements.

b. Future research and management techniques will permit greater use of the range resource coordinated with other resource objectives.

c. The stabilization of the family farm and rural economies will continue to be a desired social objective.

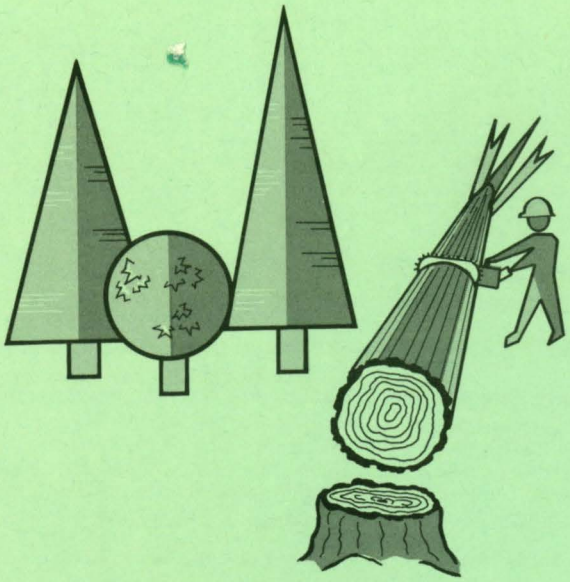
Goal

Manage the forest range resource for efficient and sustained production of livestock consistent with other uses and public interests.

Policies

a. Use range management techniques, where practical, to enhance other resources and activities.

b. Identify and make livestock producers aware of National Forest areas that are available for production of livestock.



TIMBER

Situation

In the mid to late 1800's the forests of the Lake States contained relatively large volumes of white and red pine. Together with substantial volumes of hardwood timber, these forests provided raw materials for building the Nation. Today the hardwoods (maples, beech, yellow birch, oak, elm, ash) make up a large proportion of the maturing forest. These forests can assume a vital role in leading the Nation's projected demands for sawtimber, pulpwood, and other products.

The Lake States will be supplying a significant portion of the Nation's timber in the year 2000. Predictions based on existing technological practices show demands for sawtimber and other forest products will exceed the supply.

New industries are moving into the Lake States, and more are expected to do so as old-growth timber supplies decline in the West. Just how much industry will shift to the Lake States is difficult to predict. However, based on an estimate of new industries recently established or being built, this increase is expected to total approximately 21 percent from 1972 to 1977.

In addition, existing pulpwood mill capacity is being expanded, and saw, chip, and veneer mills are being modernized to use wood from small trees for lumber, plywood, and other products.

Aspen is classified and utilized as a softwood in the construction industry. Recently implemented technology for the production of aspen dimension stock and plywood indicate this species will help meet future softwood demand.

The largest anticipated shortage will be of softwoods, especially sawtimber. Producers of hardwood lumber and plywood that are dependent on the higher grades of preferred species (red and white oaks, yellow birch and maples) face supply problems and prospective increases in prices. However, supplies of low quality timber could be made available for pallets, construction timber, railroad ties, or hardwood pulps if placed on the market.

Areas presently on National Forest lands that are either poorly stocked or are producing small quantities of low value material could be replanted to help alleviate the shortage. It will be necessary to provide full coordination with other resources and uses to avoid detrimental impacts.

Timber management activities provide opportunities to manipulate vegetation on forest lands to accomplish other resource objectives.

The northern hardwood timber type,which totals approximately 8,766,000 acres for all ownerships in Michigan and Wisconsin, offers opportunity for production of high quality sawtimber. The maple-beech-birch type is the most commercially valuable timber type in the Lake States, but the extensiveness of this type poses problems because this reduces wildlife habitat needs for young vegetation and openings. In addition, tree species requiring light, such as yellow birch, are gradually disappearing.

The present surplus of overmature aspen in Minnesota also poses a problem. If it isn't harvested in time, a substantial volume and growth loss of aspen will occur. In addition, species composition will often change to more tolerant northern hardwoods, balsam, fir, and brush types.

Assumptions

a. Under current management practices, demand for timber products in the Lake States will exceed growth by the year 2000.

b. Demand for wood products will accelerate over the long-term.

c. The amount of land available for timber production in Wisconsin, Michigan, and Minnesota will decrease by 3 million acres (6 percent) by the year 2000. Timber production lands on the seven National Forests in those States will diminish by at least 50,000 acres.

d. There will be significant improvements in logging technology.

e. Public concern with timber management practices will increase.

Goals

a. Provide a sustained yield of forest products consistent with the capability of the land and other resource values.

b. Provide for the production of high quality veneer and lumber products.

c. Improve utilization practices, both in the woods and in the mill.

Policies

a. Explore viable alternatives for sites that require special management constraints to obtain optimum timber production.

b. Modify silvicultural practices to assist in achieving other resource objectives.

c. Following approved silvicultural guides, provide for regeneration and growth of a good mixture of tree species consistent with other resource considerations.

d. Soil suitability data will be a major factor in making decisions concerning species management on specific sites.

e. Soil inventory and interpretative data are prerequisites for species conversion decisions.

f. Encourage and/or specify logging methods that will best achieve the management objectives for a stand, yet are compatible with the protection needs of the site, residual vegetation, and other forest uses.

g. Encourage full-tree logging to accomplish site preparation for regeneration, reduce fire hazard, improve aesthetics where feasible, and improve utilization, except where significant damage will occur to the soil or water resources or to the residual stand of trees.

h. Develop and use improved planting stock to improve growth characteristics and other benefits such as resistance to insects and diseases.

i. Herbicides may be used as management tools where there are reasonable environmental safeguards.

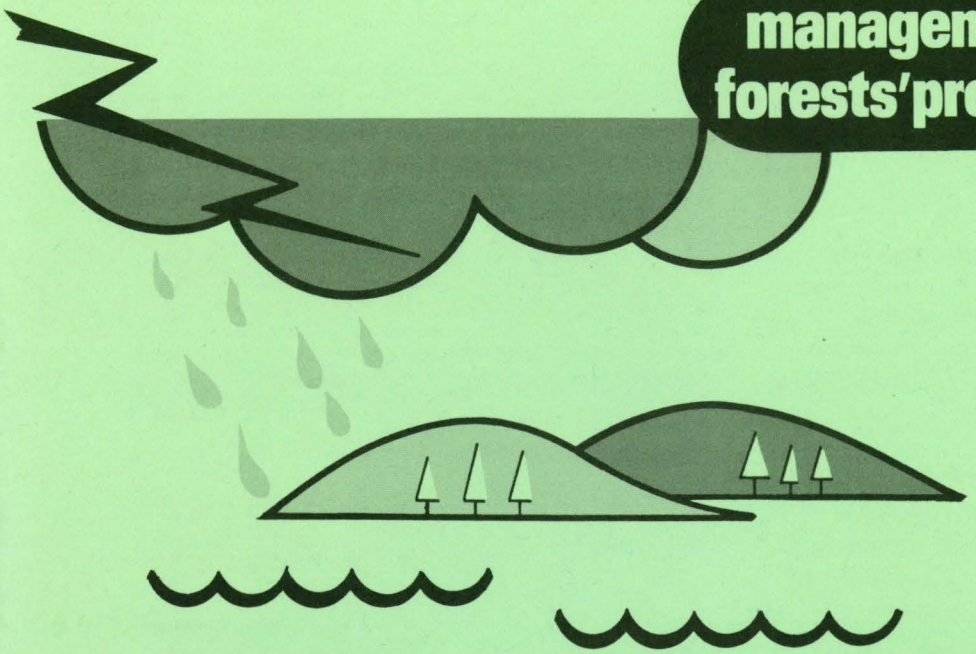
j. Nursery programs will include growing plant materials for wildlife, erosion control, and aesthetics.

k. Nonstocked and poorly stocked land will be brought into full production in coordination with other resource needs.

l. Cooperate with and encourage timber industries to improve wood utilization.

m. Recognize the national need to increase softwood supplies, and provide for softwood production on appropriate sites consistent with other resource considerations.

n. Increase emphasis on cultural treatments to utilize the full production potential of the land, with high priority on the most productive sites.



WATER

Situation

The Lake States Area earns its name because a substantial volume of area is surface water. Excluding the Great Lakes, about 1 acre in 17 is surface water in the Lake States compared to 1 acre in 46 for the conterminous United States. On a volume basis, this amounts to between 10 and 15 acre-feet of surface water per each 16 acres of land. Again, excluding the Great Lakes, 6 of the 10 largest freshwater lakes in the United States lie within the Lake States Planning Area.

Streams are plentiful within the Lake States Area. While daily runoff from the area averages 40 billion gallons per day, present daily utilization is only 1.2 billion gallons. By the year 2000, daily utilization is expected to reach 1.4 billion gallons.

Ground water supplies in the Lake States Area are highly variable yielding several hundred gallons per minute in areas of deep permeable glacial drift to less than 10 gallons per minute where bedrock lies near the surface. Since mining and mineral concentration facilities are usually associated with bedrock deposits, this implies a necessary impact on surface waters in these areas. Thus, despite the differences between surface runoff and consumption noted above, extensive, local water development may be needed to handle mining related installations.

Similarly, the energy crisis may pose significant future impacts on the abundant surface water supplies of the Lake States Area. These impacts would occur locally, where large amounts of water might be exported from the planning area for coal gasification or oil shale development elsewhere.

Water quality within the Lake States Area is generally high and only infrequently reflects significant impacts from cultural activities. Except for the eastern portion of the area, surface waters tend to be soft (low in total dissolved matter) reflecting the absence of inputs from ground water supplies which are typically hard (high in total dissolved matter). Turbidity and sediment loads of streams are generally low, but both streams and lakes are often stained brown by drainage from organic wetlands. Where ground water supplies have been developed, water is of suitable quality for domestic and industrial uses.

When high quality surface water resources are abundant, the potential for degradation through cultural activities is great. This is especially true in areas having impermeable watershed (bedrock, clay, consolidated drift) where impacts from land use activities (road construction, logging, mining, shoreline development) are most readily reflected in alteration of water quality. Although the impacts of such activities will be lessened through increasingly stringent water protection standards, they can never be entirely divorced from the watershed.

Assumptions

a. Accelerated private and public development of both lake and stream shorelines will pose an increasing threat to surface and ground water quality.

b. There will be increased demands for water in mining operations.

c. Except for local situations, principally in northeastern Minnesota, there appear to be adequate water supplies through the planning period.

d. The use of small inland lakes for commercial protein production will be minimal during the planning period.

Goals

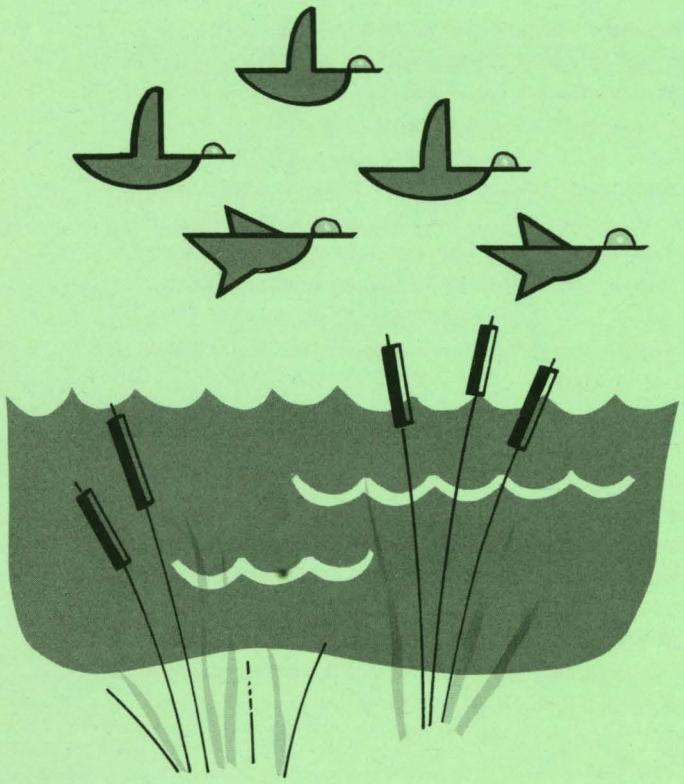
a. Protect the surface and ground water resources of the National Forests through the application of sound land management and water monitoring techniques.

b. Rehabilitate significant surface or ground water problem areas through sound watershed management techniques.

Policies

a. Nutrient loading models and loading criteria will be used to assess the impacts of land use practices on water quality. Such a concept provides a conceptual framework from which the planner can assess the total impact of activities within a given watershed on either lake or stream water quality.

b. The trophic character or state of lakes, as determined utilizing available nutrient loading models, will not be allowed to vary beyond permissible limits as specified in Forest/Unit Plans.



WETLANDS

Situation

Excluding the Superior National Forest because there is no inventory available, about 6 percent of the total National Forest lands in the Lake States are nonforested wetlands. The percentage varies from a low of 1.9 percent on the Huron-Manistee to a high of 11.5 percent on the Chippewa National Forest. Occupying about the same surface areas as open lakes, wetlands also contribute considerably to both the quality and quantity of water supplied by the National Forests. Wetlands serve to store water, gradually releasing it to recharge lakes and streams. Their vegetative composition provides habitat for many species of wildlife and a variety of plants. At the same time, they play a role in the natural nutrient input to lakes and streams.

management direction for forests' production activities

Wetlands are a naturally diminishing resource. They are areas halfway on the journey from lake to dry land. In many cases, man's activities have hastened the process by drainage and landfill. In other cases, man has reversed the process by building dams and water control structures to flood such areas.

Nonforested wetlands are areas of predominantly organic and alluvial soils that are permanently or periodically saturated. The water table persists for a time at or above the ground surface, but it may drop well below the surface for seasonal periods. Standing water may be present seasonally or persist over long periods of time. Characteristic kinds of wetland and vegetation develop in various situations; thus, they may be classified as marshes, sedge meadows, sphagnum bogs, seasonally flooded meadows, or simply as swales.

Many wetlands were originally drained for agricultural purposes. Many were also drained or used as landfill for building projects such as roads and highways. However, such projects often had a deleterious effect on ecosystems, waterfowl, and furbearers, which has aroused public resistance to elimination of wetlands by those who recognize their unique value.

The biological productivity of wetlands is quite high. On a per acre basis, they produce about twice as much organic matter per year as an adjacent forest upland.

There have been projects to utilize wetlands for the production of timber, which may attract increasing interest as the projected timber shortage becomes more acute. These involve specialized planting or silvicultural techniques to secure reproduction. Thought also has been given to modifying ground water levels to accelerate timber growth. Such projects were never implemented fully because the investment required could gain better results if applied elsewhere. However, the Scandanavian countries have developed expertise for such projects.

Since 1964, there have been continuing efforts on the Chippewa National Forest to provide a variety of wetland types by construction of lowhead dams, pothole blasting, etc. This has produced a 300 percent increase in waterfowl production, which has attracted the attention of both State agencies and other National Forests. Consequently, proposals have been made to accomplish similar objectives on other Lake States National Forests.

There also have been instances where wetlands have been managed for the protection of threatened or endangered species.

The future role of these wetlands will require careful study. These lands offer valuable opportunities for intensive management to achieve a variety of resource objectives.

Assumptions

a. The number and area of wetlands will continue to diminish and degrade due to changes in land use and naturally occurring changes.

b. Remaining wetlands, especially those under jurisdiction of land management agencies, will become increasingly important for their inherent values as natural wetland plant and animal associations.

c. As demand for various products (farm products, timber, ducks) increases, there will be greater pressure to modify existing wetlands for the production of specific products.

Goal

Manage wetlands for their biological, aesthetic, and other values.

Policy

a. Wetlands will be managed to achieve a variety of resource objectives, including timber production.

b. Work to achieve a variety of wetland types.

MANAGEMENT DIRECTION FOR FORESTS' SUPPORT ACTIVITIES

Support activities involve programs which indirectly provide product and service outputs. These programs include transportation systems, land adjustment, fire management, and insect and disease control. Transportation systems are essential to make products and services available from the National Forests and for routine administration. Land adjustment (purchase and exchange) is needed on Lake States Forests to improve their ability to supply commodities and services, to improve management efficiency, and to protect or rehabilitate certain critical resources.

FIRE MANAGEMENT

Situation

Wildfire in the Lake States Area has taken some of the greatest tolls in human life of any natural disaster on the North American Continent. The Peshtigo, Wisconsin Fire of 1871 killed over 1,300 people. As late as 1918, the Colquent, Minnesota Fire killed over 500 people. The subsequent campaign to eliminate all fires was largely successful. For example, by 1973 Wisconsin forest fires were about one-third the size and one-half the total acreage of the fires in 1940.

As time passed, however, other effects of total fire elimination policy became evident. Certain desirable ecological conditions vanished from the scene because they needed fire to maintain them. Fuel began to build up in certain forest types so when a fire did occur it burned much hotter. Consequently, prescribed fire was instituted as a management tool. Prescribed fire is the planned use of fire for some specified management purpose. Use of this tool ranges from pertetuating prairie type vegetation for wildlife purposes to burning logging slash during a safe period of the year, thus preventing an uncontrollable fire later on.

management direction for forests' support activities

Certain portions of the National Forests have been set aside to be managed in their natural state. Quite often, fire was a natural part of their history. In these cases, the Forest manager has the option of allowing wildfires to burn under certain specified fuel, weather, and terrain conditions.

Wildfire continues to hold great potential for natural catastrophe in the Lake States, because of the growing number of people using the Forests and developing permanent residences.

Climatic conditions needed for catastrophic wildfire occur periodically. These natural conditions, coupled with increased human risk, require the maintenance of a trained and equipped fire suppression organization.

Assumptions

a. The commercial, recreational, and residential uses of forested lands will increase, thus increasing the risk of fire.

b. Fuel management will mitigate the hazard caused by logging residue.

c. The proliferation of buildings in the rural forested area will create a demand for rural fire departments, because forest fire control organizations are not trained or equipped to handle building fires.

Goals

a. Hold costs for wildfire control to levels consistent with human and natural resource values being protected.

b. Manage fuels to reduce unacceptable hazard of fire, especially along roadsides and other areas of concentrated public use.

c. Use prescribed fire as a resource management tool.

d. Achieve balance, proportional to responsibilities for fire protection, among cooperating agencies.

Policies

a. Efforts directed toward prevention, detection, fuel management, presuppression, and suppression of wildfires will be in proportion to the resource values protected and human safety.

b. Identification of areas and detailed planning for delayed attack will normally be done in Unit Plans.

c. Forest Supervisors will assist State and Private Forestry to encourage the creation of rural fire departments to protect private structures within and adjacent to the National Forests.

d. Prescribed fire will be used as a management tool where considered to be the best method for reaching resource management objectives.

e. Work with the local level of Government in planning to include fire prevention considerations in zoning construction on adjacent and intermingled lands.

f. Plan for diversity in vegetative types, using the less flammable vegetative types as fuel breaks.

g. Plan the location of fuel breaks, wildlife openings, and heliports in relationship to each other and in relationship to natural fire barriers in developing a fuel break system.

h. Negotiate an average annual reduction in the fire protection responsibility imbalance which will eliminate it or reduce it to an acceptable level by 1982.

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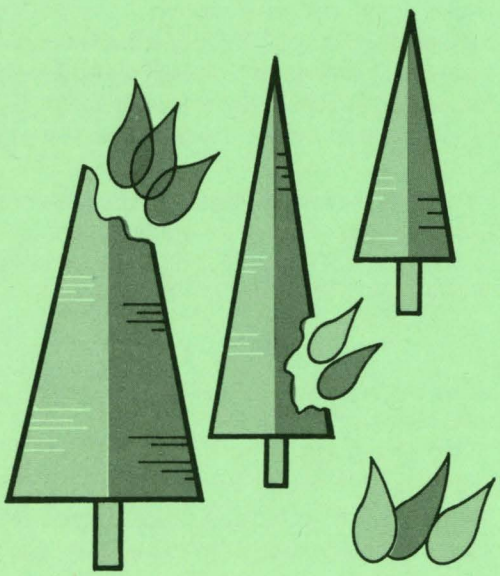

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INSECT AND DISEASE CONTROL

Situation

The impact of insects and disease upon the Forests is much greater than most people imagine. It is estimated that at least 10 percent of the yearly wood growth is lost each year to insect and disease effects. This does not include losses incurred by the slowing of growth. Other effects include aesthetic impacts and increases in fire hazard, particularly in large areas of dead and dying trees.

The Lake States Forests are subject to many varieties of insect and disease attacks. Dutch elm disease is rampant in the southern portions of the area. Forest tent caterpillar outbreaks occur at 10-15 year intervals. Although trees are rarely killed, there are major losses of growth. White pine blister rust and white pine weevil have greatly reduced the numbers of white pine in Lake States Forests. Spruce budworm, which primarily attacks balsam fir, has caused losses of millions of cubic feet of wood on the Superior National Forest alone. There have also been severe localized losses on other Forests. The land manager has many tools available to combat insect and disease losses. All have assets and drawbacks. Effectiveness of biological controls has frequently been erratic. Chemical controls are more predictable on the target pest but may adversely affect biological communities. Silvicultural and genetic controls, when more fully developed, may help solve some of the problems.

Assumptions

a. Chemicals will continue to be available for insect and disease control, but constraints on their use will continue to increase.

b. Development of more effective biological control methods will reduce reliance on chemical use.

c. As more forest stands near maturity, insect and disease problems will increase.

d. Detection technology will increase with better remote sensing systems being developed and employed.

Goal

Reduce losses from insects and disease to levels consistent with resource values being threatened.

Policies

a. Explore and implement early detection systems to identify potentially damaging insect and disease outbreaks.

b. As part of the Forest planning process, National Forests, in consultation with State and Private Forestry and Research, will establish tolerance limits beyond which insect and disease controls will be initiated.

c. When effective biologic controls are available, their use will be favored over chemical controls.

d. Losses will be salvaged to the degree compatible with other resource management objectives.

LAND OWNERSHIP ADJUSTMENT

Situation

The planning area comprises about 75 million acres within the States of Michigan, Wisconsin, and Minnesota. Somewhat over 25 percent of this land is in public ownership; about 6.9 million acres (9 percent) of which is under National Forest management.

Land under National Forest management ranges from 81 percent on the Chequamegon National Forest to 38 percent on the Manistee National Forest. Because of the amenities provided by adjacent or surrounding National Forest lands, some private inholdings are prime targets for subdivision.

The lands within the Lake States area were originally surveyed by the General Land Office more than 120 years ago. The original corner monuments set up in this survey have deteriorated from natural decay, wildfire, and human destruction. They were not preserved because most of the area set aside for National Forests were sparsely settled. Thus, these Forests face a monumental task in searching for and monumenting legal land corners, establishing lost and obliterated corner positions, defining legal property boundary lines, and working in cooperation with States and the Bureau of Land Management to resolve boundary problems and correct errors and omissions in the original surveys.

Within the Lake States Forests, nearly 75,000 corners are in need of remonumentation, and about 30,000 miles of boundary line should be marked. Unless property boundaries are defined, there are risks of encroachment both from adjacent ownerships as well as upon the private rights of adjacent owners from unsuspecting National Forest users.

In recent years, there has been a rapidly accelerating subdivision of forests and croplands into residential uses. Once land has been subdivided into units less than 20 acres, it is lost for such forest purposes as timber production, public hunting, hiking, etc. Posting is now quite common, further removing land from public recreation use. The present rate of subdivision is not known. However, in some Michigan counties along the southern border of the planning area, over 1 percent of the county area is being converted to residential use each year (mainly summer or retirement homes, at present). This type of development is spreading rapidly across the entire planning area.

Assumptions

a. Subdivision of undeveloped forest land will continue.

b. More private lands presently available for public recreation use such as hunting, hiking, etc., will be posted, thus increasing pressure on the public and industrial lands.

c. Random subdivision or development of private inholdings will increase situations of conflict and incompatible adjacent use.

Goal

Identify land acquisition and disposal opportunities on each National Forest.

Policies

a. Each Unit Plan shall have a program containing analysis and rationale of land adjustment needs related to quantifiable targets.

b. The Forest Plan shall establish land adjustment priorities among planning units.

c. Land rehabilitation needs will be determined for lands proposed for purchase. The cost of rehabilitation will be known before a decision to buy is made.

d. Except to ease administration or where increased public benefits will accrue, do not attempt to acquire other managed public lands within the boundaries of the National Forest.

e. Lands should not be acquired in those areas within the National Forest boundary with potential for community development.

f. Land acquisition will normally proceed on a willing buyer/willing seller basis. Condemnation will only be used where essential to (1) acquire rights-of-way, (2) gain lands needed to protect a critical resource or public investment, or (3) acquire lands necessary for high priority public uses.

g. Unit Plans should identify the areas which are better suited to other than Forest Service objectives, such as agriculture, community expansion, commercial, industrial, and residential uses. National Forest lands within these areas should be traded for lands more suitable for National Forest purposes.

h. National Forest lands adjacent to other ownerships will be managed up to the actual boundary, with no more restrictive practices than any private owner can reasonably extend to a good neighbor.

i. Implement an accelerated program of section corner restoration and land surveys.

SOILS

Situation

The soils in the Lake States are reflections of glacial deposition. They can be grouped in the following five kinds of materials.

Glacial Outwash —flat, undulating or pitted areas with dominantly sandy and gravelly, well drained soils. Soil fertility and water holding capacities are low. Pine plantings are extensive here. These soils are sensitive to disturbances affecting the thin surface layers.

Upland Moraine —hilly to strongly undulating areas with a complex pattern of generally loamy, stony, well drained soils. Lakes and pockets of wet areas are common. These are esthetically attractive areas. Onsite erosion and minor areas of mass movement may be a problem.

Lowland Moraines —these are flat to gently undulating areas with somewhat finer textures and less well drained soils than upland moraine soils. These are generally highly productive areas, but fragipans, soil drainage, and fine soil textures present local obstacles to equipment movement and road building.

Lacustrine Plains —these glacial lake deposits are nearly level except where dissected by streams. The soils are dominantly fine-textured, stone-free and imperfectly to poorly drained. Wetlands with organic soils are extensive in places. Management revolves around the fine soil textures and drainage problems. Soil fertility is high and where well drained, these soils are very productive. Natural erosion and mass movement are common on the sides of valleys here. Road location and equipment movement must be closely matched to the land in this soil group.

Organic Soils —these occupy wet lowlands and are predominantly mucks and peats. These soils are mostly stone-free and poorly drained. Management situations are related to unstable material, prolonged wetness, and generally low fertility. Organic soils are commonly associated with lakes, streams, and drainageways. In the Lake States, totally, organic soils are estimated to occupy over 15 million acres. They have not received the attention their great area merits.

Within each of the above soil groups, considerations such as source of glacial materials, presence of wind-deposited materials, and local relief in relation to ground water add to the complexity of the soil pattern. The soil pattern is further obscured by the blending of forest communities, subdued topography, and past land disturbances.

Soil interpretations in the Lake States generally identify opportunities rather than limitations. The prevailing low relief, high vegetation potentials, and paucity of torrential precipitation make traditional erosion and stream sedimentation hazards insignificant except in small areas. Soil management errors are expressed by such things as less than full utilization of site potential, seasonal road problems, unsatisfactory sewage drainfields, beat-out campgrounds, and local erosion problems.

Soil inventories of various intensity and age cover all the Lake States Forests. Modern, detailed soil inventories are available on about 25 percent of the area.

Assumptions

a. The demand for soils information in the Lake States will increase.

b. Soils are ecologically inseparable from other basic resources.

c. More attention must be given to management of organic soils.

Goals

a. To have soil inventories adequate for Unit planning purposes to keep pace with Unit planning and the compartment examination need for soil data.

b. Develop procedures for systematic inclusion of soils information in Forest and Unit planning processes.

c. Develop information guides for organic soils.

Policies

a. Use existing information and remote sensing techniques to fullest extent.

b. Use a varying intensity, integrated inventory system geared to the specific needs being served.

c. Correlate soil units and interpretations among Lake States Forests.

d. Plan soils input to compartment examination to maximize multiresource benefits.

e. Soils information will enter the planning and management process through all facets of a soils program including: inventories, soil management services, special studies, training, and handbooks.

f. Soils input to planning and management will be based on an analysis of information needed on each Forest.

g. Coordinated efforts between Forests will be used to solve problems common throughout the Lake States, e.g. management of organic soils, development of monitoring techniques.

TRANSPORTATION SYSTEMS

Situation

Existing transportation facilities within the Lake States Area provide easy access to the National Forests from major cities to the south and east. The southern portion of the area served as the western migration corridor, following water routes. Present rail and highway systems evolved from this transportation pattern. Rail service is now declining.

In recent years, emphasis has been to upgrade the north-south highways and air transportation facilities leading to the Forests. Within the National Forest boundaries, adjustment of the road system is a continuous process. Additions, deletions, and improvements are being made so that goods and services can be efficiently delivered and utilized.

A demand for trails has emerged as recreation use has increased. Snowmobiles, other types of off-road vehicles, hiking, cross-country skiing, snowshoeing, horseback riding, canoeing, and bicycling are competing for the use of National Forest land areas and trails.

Assumptions

a. Increased demand for intensive forest products and services will require improvement of existing, and development of new, transportation facilities.

b. The demand for both motorized and nonmotorized trails will continue to increase.

c. Public road systems will have to carry the increased traffic generated by the continuing reduction in rail service.

Goal

Cooperatively plan, develop, and maintain a transportation system for the protection, development, utilization, and administration of the National Forests and intermingled other ownerships.

Policies

a. Transportation planning will be done as an integral part of land use planning.

b. Roads and trails no longer needed or in conflict with National Forest management purposes will be closed, obliterated, or use limited.

c. Working closely with public agencies, industrial and private landowners, develop and maintain a coordinated transportation system.

d. Roads and trails will be located, designed, constructed, and maintained to meet management objectives as prescribed in the Forest and Unit Plans.

e. Limit road and trail signs to those necessary to inform, direct, and provide adequate safety warning to the forest users.

f. Limit off-road vehicle use to designated routes and/or areas to insure protection of users and resource values, and to minimize conflicts.

g. Resolve the ownership uncertainties of the rights-of-ways of existing roads.

FOREST SERVICE STATE AND PRIVATE FORESTRY IN THE LAKE STATES

Situation

Management of the National Forests in the Lake States has a close relationship with the management of other public and private lands within the area.

Future demands made on the National Forests for goods and services will depend, to a large degree, upon the production and services provided by other public and private lands. These lands account for more than 80 percent of the forested land in the Lake States. They now supply the greater part of todays timber products and must continue to provide the major portion. Timber productivity gains are possible, along with many associated improvements in the resource values of recreation, wildlife, and other environmental benefits.

Assumption

Large gains in forest and related resource productivities are possible.

Goals

a. Encourage improved protection, management, utilization, and environmental enhancement of private and public lands.

b. Improve the welfare and economy of people living in rural areas.

Policies

a. State and Private Forestry programs will be accomplished cooperatively with various private and public organizations, particularly State Forestry Departments.

b. State and Private Forestry objectives will be achieved through the programs of:

Forest management
Forest products harvesting, marketing, and manufacturing
Detection, evaluation, and suppression of forest insects and diseases
Watershed management
Appropriate land use planning assistance
Meeting National Environmental Policy Act responsibility
River basin planning
Nurseries and tree improvement
Fire prevention and suppression
Rural fire defense planning
Interpretation and implementation of research findings

c. Provide assistance through rural area development and related programs.

d. Provide pathological and entomological advice to National Forests.

FOREST SERVICE RESEARCH IN THE LAKE STATES

Situation

The North Central Forest Experiment Station carries on research in more than a dozen different disciplines. This research is coordinated with work being conducted by universities, forest industries, and foundations within the Lake States and adjacent areas, and the Forest Products Laboratory located in Madison, Wisconsin. The Station headquarters is located on the University of Minnesota's St. Paul campus; its field locations in the Lake States include research work units at Grand Rapids and Duluth, Minnesota; Houghton, East Lansing, and Marquette, Michigan; and La Crosse and Rhinelander, Wisconsin.

Station research in timber production is aimed at finding ways to increase volume and value growth rates, to plant and grow selected species, and to develop inherently superior trees in the Lake States. This research is coordinated with other forest land uses to obtain optimum benefit from the resource.

Recreation research is both ecological and sociological. Natural plant and animal communities are being studied to find out how they are developed and how they can be maintained or changed to meet management objectives. Forest visitors are consulted to find out why they come to the woods and what they hope to find.

To protect and regulate water resources associated with forests, research is uncovering evidence about how different kinds of soils and vegetational covers affect surface and subsurface flows.

Fire research is finding ways to determine the physical effects of fires on forest resources and ways to appraise fire damage. New methods and equipment are being developed so that fire can be used as a management tool.

Aspen, the leading pulpwood species in the Lake States, is susceptible to several diseases that seriously limit its productivity. Station pathologists are seeking effective control measures.

Insect research is directed to evaluating the role of insects in the forest and appropriate control methods.

The Station is responsible for conducting periodic forest surveys. Approximately every 12 years the timber in each State is inventoried: volume, quality, growth, mortality, and cut are estimated. The results are then compared with previous surveys to determine trends.

Savings in money and the timber resource itself can be made by more efficient harvesting, utilization, and marketing. A good start has been made in development of mechanized logging concepts and in finding ways to use more of the available timber. In addition, economic guidelines developed by research help owners choose among the many ways to grow trees so the forest owner can make best use of his land, employees, money, and equipment.

About 41,300 acres of experimental areas within the National Forests are used by the Forest Service, universities, and other groups for demonstrations and investigations of a wide variety of ecological, social and economic consequences of management. In addition, about 8,631 acres of research natural areas have been set aside for the purpose of preserving major natural timber types or other plant communities in unmodified condition. In conjunction with natural area use, research is being conducted on the rehabilitation and stabilization of remote recreation sites as well as the social and physical capacities of these areas.

forest service research in the lake states

A comprehensive research program is needed to determine multiple-use values of the aspen-birch-conifer forests in the Lake States. These forests occupy about 30½ million acres of forested land in the northern Lake States. However, acceptable growing-stock trees are sparse or totally absent on almost 8 million acres. The major obstacle facing land managers within the aspen-birch-conifer forest environment is a considerable lack of integrated information necessary to properly evaluate management decisions to insure continued quality production of all multiple-use values and products. More specifically, information is needed:

(1) to understand the historical and/or biological reasons why almost 8 million acres of land that once produced large amounts of pine timber are now of very low productivity from the standpoint of timber production and the consequences of management alternatives for these areas,

(2) to determine the ecologic, social, and economic consequences of allowing succession to proceed, converting to alternative species, or arresting succession in the aspen-birch type, and

(3) to determine the ecologic, social, and economic consequences of whole tree removal systems on the aspen-birch type.

Assumption

Increased research will be needed to provide land managers with appropriate resource and user information.

Goal

Inprove the dissemination of applicable research results to land managers and the communication of pertinent problems to research institutions for consideration.

Policies

a. National Forest administrative studies should be employed to provide interim data where formal research information is lacking. Research expertise should be involved in the design and implementation of the study and assist in interpretation.

b. Any proposed research involving National Forest lands and users will require the filing of a proposal with the Regional Forester or appropriate Forest Supervisor, which outlines the objective, scope, and method to be used. A copy of the final report will also be given to the same authorities.

c. Institute new methods to effectively and efficiently provide research information to interested people, research institutes, and universities.

d. The Forest Supervisors, with the Regional Forester and North Central Forest Experiment Station Director, will develop and periodically update a Research Needs Inventory, indicating the priorities of research needed to raise the quality of management on the Lake States National Forests. Suggested needs follow:

(1) Improve management techniques for the forest land manager to gain desired goods and services to meet the needs and demands of the American people without impairment of the environment.

(2) Develop safe, effective, and economical methods of preventing or suppressing forest fires, forest disease, and forest insect infestations by direct or indirect methods.

(3) Improve the marketing and production systems for forest products aimed at lowering costs and increasing the efficiency of harvesting, transporting, processing, distributing, selling, and using forest products.

(4) A new inventory of timber supplies from all forested lands.

(5) A method to measure the experiences derived by Forest visitors, what influenced their recreational choice, and the nature of personal benefits sought.

(6) A system for monitoring the effects of various silvicultural systems and techniques on wildlife habitat.

(7) Determine methods of simulating old-growth habitat for wildlife purposes.

(8) Monitoring and "early warning" systems for insect and disease outbreaks to allow land managers to take early action to control them.

(9) Methods for measuring the effects of insect and disease activity on forest production.

(10) An analysis to determine the proper ratio of nonforested wetlands in the multiple use management of the National Forests.

(11) A system for determining the capacity of recreation lakes for significant recreation use without impairment of their quality.

(12) A system for measuring and monitoring wildlife and fish habitat which might be affected by National Forest land management practices.

(13) Cost-effective and practical wildlife inventory methods that can be integrated into other resource inventories.

(14) Studies to determine the structure of the various biotic communities, both vegetative and animal, native to each physiographic province, before final vegetative composition goals are set.

(15) Identification of plant species useful for wildlife that might survive as an understory in dense, unthinned conifer plantations.

(16) Studies to assist in management of wetlands and to help define the role wetlands should play.

(17) Institute or accelerate white cedar hemlock regeneration research and lowland hardwoods management studies.

(18) Institute programs to evaluate effectiveness of wood by-products in alleviating energy shortages.

LAKE STATES NATIONAL FORESTS' MANAGEMENT ZONES

Forest lands are not homogeneous; therefore, they cannot all sustain the same intensities or varieties of use. National Forest lands have been analyzed and tentatively classified according to their suitability to meet various mixes of resource use. The result is the development of seven basic types of Management Zones, each providing a separate mix of goods and services.

Three Management Zones have been defined for Service-wide use—Water Influence, Travel Influence, and Special Zones. In the preparation of Forest and Unit Plans, the use of these zones will be considered and, where appropriate, applied in accordance with National direction. (See FSM 8223.)

In addition to the above required zones, four Management Zones—Zone I, II, III, and IV—are defined below for optional application in planning for the National Forests of the Lake States. During the Forest land use planning process, consideration will be given to delineating the Forest into these four Management Zones. Delineation of the Forest into these zones will provide the basis for allocating land and targets.

A Management Zone is a parcel of land allocated to particular management practices in order to attain a desirable mixture of resource uses and user experience levels.

PURPOSE OF MANAGEMENT ZONES...

- To assist in the implementation of the policies previously stated.
- Provide allocation of adequate land base to meet total multiple use outputs.
- To better deal with conflicts between various uses and outputs.
- Insure that multiple use outputs are consistent with land suitability.
- Relate multiple use planning to management application.
- Improve understanding of multiple use management and its benefits.

ALL MANAGEMENT ZONES ARE SUBJECT TO THE FOLLOWING...

All goals and policies stated previously are applicable to the Management Zones and will be carried out consistent with the limiting coordinating policies established for each area.

- Lands designated as "Special Area" shall be managed according to their individual management plans until revised.
- Coordinating policies for each zone represent the maximum impacts permitted. Management practices and uses having less impacts than the coordinating policies are permitted.
- Measures necessary to prevent significant resource loss or damage and to protect human life will be taken as prescribed by the Forest Supervisor or Regional Forester.
- Refinement of zone policies and selection criteria may occur during Forest planning to provide better direction to specific resource situations.
- The overall concept of Lake States Forest Management Zones may be changed by Guide revisions.

National Forest lands selected for each Management Zone must be based upon the suitability of the land to meet the output mix desired for that Management Zone. The output level desired determines the amount of land allocated to each Management Zone.

SELECTION CRITERIA

MANAGEMENT ZONE I

- General forest area not contained in one of the other zones.
- Contains most of the standard commercial forest lands.
- May contain some dispersed recreation facilities.
- Transportation facilities generally well developed.

MANAGEMENT ZONE II

- Contains relatively large contiguous areas (generally 1,000 acres or more) with a past history or an above average potential for dispersed recreation use.
- Includes areas that are fairly remote.
- Does not contain heavily used roads, and roads are generally under National Forest jurisdiction.

lake states national forests' management zones

Most National Forest lands will meet the criteria for more than one Management Zone. The lands best suited ro provide the output mix desired must be selected from among lands which meet the criteria, and allocated to meet the total Forest output level.

MANAGEMENT ZONE III

- Includes relatively large contiguous blocks (generally 1,000 acres or more) of essentially undisturbed land containing some of the most challenging, primitive recreational terrain and water.
- Contains lands and waters best suited to provide a level 1 recreation experience.
- No permanent roads will be located in these areas.

MANAGEMENT ZONE IV

- Campgrounds (development levels 3-5) and their adjacent recreation use area, nurseries, administrative sites, seed production areas, areas of historical, archeological, or biological importance that have not been formerly classified.
- Highest timber production sites.
- Includes key areas of wildlife habitat.
- Municipal watersheds.
- Other areas that require or warrant intensive management activities or capital investments because of established use, potential use, or high productive capability.

DEMONSTRATION AREAS

MANAGEMENT ZONE I	MANAGEMENT ZONE II
• Not applicable.	• Not applicable.

DEVELOPMENTS

MANAGEMENT ZONE I	MANAGEMENT ZONE II
• Not applicable.	• Not applicable.

LAND OWNERSHIP ADJUSTMENT

MANAGEMENT ZONE I	MANAGEMENT ZONE II
• Acquisition of land within this zone will usually be of medium priority.	• Acquisition of land within this zone will usually be of medium priority.

POLICIES

lake states national forests' management zones

MANAGEMENT ZONE III	*MANAGEMENT ZONE IV*
• Not applicable.	• Special provisions may be made to plan demonstration areas for public education. • Such areas shall be planned to offer exposure to the widest possible range of management practices and uses. • No effort, beyond planning, should be expended until such time as the financing, maintenance, and administration of such an area can be totally effected. • Management practices and use may be observed on all National Forest lands; demonstration areas developed will be for the convenience of the interested visitor.

MANAGEMENT ZONE III	*MANAGEMENT ZONE IV*
• Structures necessary for the protection of the site, safety of the visitor, and the protection or improvement of water quality may be developed.	• Not applicable.

MANAGEMENT ZONE III	*MANAGEMENT ZONE IV*
• Acquisition of lands within this zone will generally be of high priority. • Obtain cooperative agreements with other public or quasi-public land owners for compatible management.	• Acquisition of lands within this zone will usually be of highest priority.

OUTDOOR RECREATION

MANAGEMENT ZONE I

- Provide a minimum of developed facilities to enhance predominantly dispersed recreation experiences (experience level 3).
- Motorized vehicle use may be allowed on designated roads, trails, waterways and/or designated areas in context with experience level 3.
- Temporarily close or relocate recreational facilities as necessary for visitor safety where timber harvesting schedules cannot be made compatible with recreation seasons.
- Enhance recreational experiences through fish stocking programs in selected lakes and streams in cooperation with States and other agencies.

MANAGEMENT ZONE II

- Dispersed recreation opportunities accommodated by nonmotorized travel will be emphasized.
- Primitive facilities offering a low degree of user convenience in a near-natural experience will be provided emphasizing experience level 2.
- Motorized vehicle use may be allowed on designated roads, trails, and waterways.
- Establish use controls in Unit Plans where needed.

SUBSURFACE

MANAGEMENT ZONE I

- Sand, gravel, and rock may be used for commercial purposes.
- Rehabilitation of use areas will be completed within a reasonable time, but not later than 2 years after active use.
- "Minor-disturbance" mineral activities will be permitted under strict administrative control and environmental safeguards.

MANAGEMENT ZONE II

- Use of sand, gravel, or rock for construction of roads and trails within the area will be followed by immediate rehabilitation.
- "Minor-disturbance" mineral activities will be permitted under strict administrative control and environmental safeguards.

POLICIES

lake states national forests' management zones

MANAGEMENT ZONE III

- Low-density, dispersed opportunities accommodated by foot and nonmotorized water travel only.
- Minimum facilities for site protection and user safety will be provided emphasizing experience level 1.
- Small groups (less than 10) will be encouraged.

MANAGEMENT ZONE IV

- Facilities may be provided for user convenience in concentrated locations emphasizing experience levels 3 and 4.
- Facilities in this area will include those normally accessible by auto traffic.
- Motorized vehicle use may be allowed on designated trails only.

MANAGEMENT ZONE III

- Subsurface materials, sand, gravel, and rock may be used administratively for purposes of site protection. Restoration will begin immediately after use.
- Prospecting will be allowed under strict administrative control and guidelines.
- Facilities for extraction of minerals under this zone will usually be located outside the zone boundary.

MANAGEMENT ZONE IV

- Major mineral developments will be permitted under strict administrative control and environmental safeguards.
- Use of sand, gravel, and rock for limited construction and maintenance may be administratively provided from designated sites.
- Rehabilitation of mineral use areas will be planned as an integral part of the operating plan and will be strictly controlled.

TIMBER

MANAGEMENT ZONE I

- Utilize silvicultural systems to optimize timber production, maintain or enhance watershed, wildlife, and other resource values within limits of soil capability.

MANAGEMENT ZONE II

- Timber management practices will be modified consistent with emphasized aesthetic values.
- Adjust timber harvesting activities to be compatible with recreation seasons.

TRANSPORTATION SYSTEMS

MANAGEMENT ZONE I

- Permanent management access roads can be constructed and may be closed to the public.
- Existing roads for public use will be brought to an acceptable level of safety and alignment or closed to public use.
- Temporary roads may be constructed for short-term use and be obliterated when no longer needed.

MANAGEMENT ZONE II

- Roads for public access will not extend to recreation facilities within the zone.
- Roads for continued management use will be of minimum standard and will generally be closed to public vehicular use.
- Temporary roads may be constructed for short-term use and obliterated when no longer needed.
- Trails provided will meet Forest Service standards.

VISUAL

MANAGEMENT ZONE I

- The prevailing quality goals will range from partial retention to maximum modification.

MANAGEMENT ZONE II

- The prevailing quality goal will be partial retention.

POLICIES

lake states national forests' management zones

MANAGEMENT ZONE III	*MANAGEMENT ZONE IV*
• Productive forest land within this area will be reserved from all commercial timber activities and included as "reserved" land in the Timber Management Plan. • Cultural treatment may be performed for the protection of the site and the user with appropriate administrative measures.	• Management prescriptions will recognize the unique characteristics of the zone, i.e. campgrounds, high timber sites, municipal watersheds. • Cultural activities within recreational complexes will be conducted to insure visitor safety and site quality. • A wide variety of timber management practices may be used to insure consistency with the stated Management Zone objectives.

MANAGEMENT ZONE III	*MANAGEMENT ZONE IV*
• No roads will be permitted. • Trails for foot traffic only will be provided to maintain recreational experience level 1 quality and resource protection. • No motorized land or water transportation for other than administrative purposes will be allowed.	• Roads developed for continued management access needs will be permanent. Roads may be closed to public use. • Temporary roads may be constructed for short-term use and obliterated when no longer needed. • Trails in this area will be for designated uses only and may be designated and constructed for higher intensity of use than in other Management Zones.

MANAGEMENT ZONE III	*MANAGEMENT ZONE IV*
• Preservation will be the prevailing visual quality goal. • Existing man-made disturbances will be high priorities for rehabilitation work.	• The prevailing visual quality goals will range from preservation to maximum modification.

WATER

MANAGEMENT ZONE I	MANAGEMENT ZONE II
• Permit only those uses and activities on lands adjacent to water courses which are in harmony with protection, maintenance, or improvement of water quality.	• Promote only those uses and activities on lands adjacent to water courses which are in harmony with protection, maintenance, or improvement of water quality. • Use "haul-out" waste disposal systems as appropriate to protect onsite and downstream water quality.

WILDLIFE

MANAGEMENT ZONE I	MANAGEMENT ZONE II
• Wildlife habitat improvement may be accomplished through timber sales consistent with timber policies. • Develop a diversity of age classes and habitat conditions to meet the needs of the various wildlife species indigenous to the area. • Encourage indigenous species, however, cooperation with States may provide opportunities to expand the productive potential through stocking programs or other forms of management.	• Special habitat values will be protected through regulation of use. • Wildlife habitat improvement will usually be accomplished through timber sales consistent with timber policies. • Develop a diversity of habitat that will provide an optimum variety of indigenous wildlife species consistent with limiting habitat factors. • Emphasize opportunities to promote wildlife viewing areas consistent with recreational experience level 2.

POLICIES

lake states national forests' management zones

MANAGEMENT ZONE III

- Use "haul-out" waste disposal systems as appropriate to protect onsite and downstream water quality.
- Water leaving the zone will be of equal or better quality than the quality at the point of entry to the area.

MANAGEMENT ZONE IV

- Through water monitoring, insure that construction and use of high density recreation facilities, as well as other resource activities, are consistent with maintenance of water quality standards.
- Concentrated recreation facilities will be designed and located to insure that water quality is maintained within current Federal standards.
- Develop structures necessary to protect streambanks and lake shores from heavy recreation use.
- Quantity may be manipulated for economic or ecological reasons.

MANAGEMENT ZONE III

- Allow free play of natural forces effecting the wildlife resource.
- Encourage indigenous wildlife species consistent with habitat capability.
- Regulate uses to prohibit unnatural changes in habitat.
- Wildlife habitat impoundments are not permitted.

MANAGEMENT ZONE IV

- Special habitat values will be protected through regulation of use.
- Emphasize habitat improvement practices on key areas to enhance population levels consistent with the limiting habitat condition.

TENTATIVE OUTPUT TARGETS

INTRODUCTION

The analysis attempts to answer the question:

"HOW CAN THE FINITE LAND BASE OF THE LAKE STATES NATIONAL FORESTS BE ALLOCATED TO A VARIETY OF USES, SOME OF WHICH MAY BE INCOMPATIBLE, TO BEST SATISFY A PORTION OF THE NEEDS AND DEMANDS OF THE AMERICAN PEOPLE NOW AND IN THE FUTURE?"

Because there are an infinite number of management opportunities, it follows that there is an unlimited number of multiple use mixes. Therefore, the purpose of the analysis was to determine alternative mixes of goods and services that could be produced from National Forest lands in the Lake States without sacrificing environmental quality and/or sustained yield capacity. In making the analysis, it was necessary to identify (a) the publics' needs and demands for goods and services produced by these National Forests, (b) the Forests' capability to satisfy them, and (c) the share the area should satisfy.

Public land allocation decisions involve a great amount of compromise among demands of competing interest groups and the evaluation of goods and services which, in many cases, have substantial intangible values. The resolution of the questions of allocation requires judgment in weighing expressions of public interest as well as quantitative analysis.

NEEDS AND DEMANDS

A primary step of analysis involved the determination of needs and demands for the outputs that might be provided by the National Forests. These outputs were identified as products (water, wood, animals, fish, forage), services (recreation experiences, educational opportunities, jobs), or economic impacts (Personal income, general business income). These needs and demands were based on what the people in the Nation, as well as those in the localities within the Lake States Area would require if these products became available.

CAPABILITY

Analysis of capability involves determining the ability of a land resource to produce products, services, and economic outputs. The *current* capability of land is that which it is capable of producing now. The *potential* capability is that which it could produce if its full potential were developed.

Available management information indicates an inherent capability of Lake States National Forest land to produce significantly more of most goods and services.

tentative output targets

PROPORTIONATE SHARE

The proportionate share of any good or service which should be produced from Lake States National Forests involves determining how much of a National need should be produced within the area and how much of this should be produced by the National Forests. This is complicated by the fact that while goods can easily be shipped from the point of production to the point of demand, services (such as recreation opportunities) must be produced relatively close to the point of demand. The tentative targets described herein are an attempt to estimate these parameters within the constraint of reasonable budgetary expectations.

MANAGEMENT TRADEOFFS

Because resources such as land, money, manpower, etc., are limited, and the demands made upon them are often unlimited, choices must be made as to which desired task will be accomplished first. Quite often, tradeoffs must be made because a decision to produce "A" may lower the potential to produce "B." Not all goods and services can be produced at the same location. When the demand for more than one output from the same area arises, conflict may occur. Some uses absolutely preclude others.

Where two or more goods or services can be produced from the same land, maximizing the production of one can lead to serious reduction in the output of the others. Managers seek to optimize a mix of outputs that best meets the needs of society. To produce this mix requires the management of conflict through the understanding and evaluation of tradeoffs at each level of planning.

TENTATIVE OUTPUT TARGETS

Decisionmakers must choose among several possible alternative mixes of tentative output targets. Targets selected provide guides for the organization as it shifts from meeting its current production of outputs, to meeting its future proportional share of outputs. Future outputs must be viewed as ranges, because needs and demands can be expected to change continuously, and the feedback process associated with the more detailed phases of land use planning will refine program emphasis.

TENTATIVE TARGETS (SELECTED ALTERNATIVE)

ESTIMATED TIMBER DEMAND AND SUPPLY ON LAKE STATES NATIONAL FORESTS

(MM CU. FT.)

	1985			2000
	SOFTWOOD	HARDWOOD	TOTAL	ALL SPECIES
Demand	40.2	61.7	101.9	248.7
*Supply**	51.7	79.8	131.5	179.9

*This includes some species and products that presently cannot be marketed.

TIMBER SALES**

(MM CU. FT.)

	1973 ACCOMPLISHMENTS			1985 TARGETS			2000 TARGETS***
FOREST	SOFTWOOD	HARDWOOD	TOTAL	SOFTWOOD	HARDWOOD	TOTAL	ALL SPECIES
CHEQUAMEGON	2.7	4.9	7.6	4.6	7.6	12.2	22.1
CHIPPEWA	2.8	5.3	8.1	3.9	7.6	11.5	19.2
HIAWATHA	4.4	4.5	8.9	6.1	5.7	11.8	25.9
HURON-MANISTEE	2.7	6.6	9.3	5.9	8.3	14.2	25.0
NICOLET	2.7	5.2	7.9	3.5	9.4	12.9	21.2
OTTAWA	1.8	4.7	6.5	3.7	11.2	14.9	30.6
SUPERIOR	4.4	4.0	8.4	12.5	11.9	24.4	35.9
TOTAL	21.5	35.2	56.7	40.2	61.7	101.9	179.9

** *Under multiple use coordination guides, all volumes are estimated from merchantable trees, 5.0 inches DBH and larger, to a variable top diameter of not less than 4.0 inches DOB, which are reasonably straight and sound. Improved utilization and marketing of other materials will increase the availability of softwoods.*

*** *In the year 2000 and beyond, demand is expected to exceed supply. Therefore, the targets shown for the year 2000 are what is estimated to be available at that time.*

RECREATION VISITOR DAY USE

(RVD'S IN THOUSANDS)*

1973

FOREST	DEVELOPED				DISPERSED**			
	DAY USE	OVERNIGHT USE	OTHER	TOTAL DEVELOPED	LAND*** RELATED	WATER RELATED	TOTAL DISPERSED	GRAND TOTAL
CHEQUAMEGON	37	148	16	201	31	13	44	245
CHIPPEWA	54	277	224	555	54	221	275	830
HIAWATHA	81	254	85	420	178	77	255	675
HURON-MANISTEE	119	368	45	532	296	93	389	921
NICOLET	40	220	9****	269	90	72	162	431
OTTAWA	142	147	44	333	101	45	146	479
SUPERIOR	109	265	204	578	598	428	1,026	1,604
TOTAL	582	1,679	627	2,888	1,348	949	2,297	5,185
PROJECTED TO 1985								
CHEQUAMEGON	45	205	20	270	37	16	53	323
CHIPPEWA	81	340	280	701	68	280	348	1,049
HIAWATHA	129	317	90	536	212	97	309	845
HURON-MANISTEE	175	457	61	693	360	118	478	1,171
NICOLET	51	323	29	403	117	91	208	611
OTTAWA	195	224	50	469	105	59	164	633
SUPERIOR	114	383	196	693	735	543	1,278	1,971
TOTAL	790	2,249	726	3,765	1,634	1,204	2,838	6,603
PROJECTED TO 2000								
CHEQUAMEGON	63	277	27	367	49	22	71	438
CHIPPEWA	108	452	378	938	91	376	467	1,405
HIAWATHA	173	424	121	718	281	131	412	1,130
HURON-MANISTEE	234	613	82	929	483	159	642	1,571
NICOLET	69	433	39	541	156	122	278	819
OTTAWA	262	300	67	629	141	77	218	847
SUPERIOR	153	514	263	930	985	727	1,712	2,642
TOTAL	1,062	3,013	977	5,052	2,186	1,614	3,800	8,852

**RVD (Recreation Visitor Day) = one person for 12 hours or 12 persons for 1 hour.*

*** Does not include hunting and fishing.*

**** Does not include off-road vehicles (ORV's).*

***** Because of unusual shifts in use, this figure is the average use for 1971, 1972, and 1973.*

WILDLIFE DEVELOPMENT TARGETS FOR 1985 AND 2000

(RVD'S IN THOUSANDS)*

	1973		1985		2000	
FOREST	HUNTING	FISHING	HUNTING	FISHING	HUNTING	FISHING
CHEQUAMEGON	69	28	80	43	107	58
CHIPPEWA	127	293	172	341	230	457
HIAWATHA	106	189	156	233	209	313
HURON-MANISTEE	319	67	407	80	546	108
NICOLET	191	165	228	201	306	270
OTTAWA	155	109	162	127	217	170
SUPERIOR	98	208**	120	265	161	353
TOTAL	1,065	1,059	1,325	1,290	1,776	1,729

WILDLIFE HABITAT***

(ACRES IN THOUSANDS)

FOREST	1985	2000
CHEQUAMEGON	60	84
CHIPPEWA	15	65
HIAWATHA	28	86
HURON-MANISTEE	19	91
NICOLET	52	65
OTTAWA	17	92
SUPERIOR	84	331
TOTAL	275	814

** RVD (Recreation Visitor Day) = one person for 12 hours or 12 persons for 1 hour.*

*** Because of unusual shifts in use, this figure is the average use for 1971, 1972, and 1973.*

**** Includes upland and wetland habitat management. In addition, 17,600 acres of sharptail grouse habitat will continue to be managed as a special species on the Chequamegon National Forest.*

FISHERIES HABITAT– Subject to an inventory of species and habitat on all National Forests as a basis for planning and implementing Forest fisheries programs.

tentative output targets

The selected alternative represents the optimum management level for the Lake States National Forests. However, optimum management levels are seldom obtained. Things such as National priorities and appropriation acts affect the level of management in the Lake States. The Guide provides a range of budget and output levels to compensate for the uncertainty of the future and to provide direction for annual and 5-year (Program Budget) budget proposals. These budget processes provide the mechanism whereby the broad guidelines of this Area Guide are translated into more specific actions.

Selected Alternative

BUDGETS 1985 (M$)	HIGH RANGE	LOW RANGE
Timber Sales	4,911	4,610
FR&T	7,725	5,000
Recreation Adm.	2,909	2,060
Fish and Wildlife	2,885	1,270
All Other	8,623	5,060
TOTAL	27,053	18,000
OUTPUTS 1985		
Timber Sell (MM cu. ft.)	101.9	101.9
Timber Sell (MMBF)	645	645
RECREATION:		
Developed (RVD)	3,765	2,680
Dispersed (RVD)	2,836	1,960
Wildlife (acres of habitat)	274,762	120,952

PRIORITIES

Within the constraints of law, executive order, congressional direction, and appropriations, the following priorities are established within program areas to guide further land use planning on Lake States National Forests. (Program areas are in alphabetical order and are not in order of priority.) Priorities for each National Forest will be developed and refined as Forest and Unit Plans are completed.

FIRE MANAGEMENT PROGRAM AREA

1. Plan and develop forest fire organizations that will handle actual fire conditions commensurate with local program needs.

2. Plan and develop fire prevention activities to insure public understanding of fire management problems.

3. Develop fuel management systems in coordination with timber management activities to reduce wildfire hazards.

4. Plan and implement prescribed fire management techniques.

FISH AND WILDLIFE PROGRAM AREA

1. Complete the Cooperative Fish and Wildlife Habitat Management Programs as specified by the Sikes Act (P.L. 93-452). This includes the administrative and research studies needed to further the evaluations of these programs.

2. Identify, inventory, and manage the habitats of those species of wildlife as required by P.L. 93-205, the Endangered Species Act.

3. Inventory species and habitat of fish and wildlife within the National Forests as the basis for planning and implementing Forest fish and wildlife programs.

4. Plan and implement a program of management for a better balance of vegetative composition in coordination with timber management activities.

5. Plan and implement project work needed to protect fish and wildlife populations in special management areas, in cooperation with the State Department of Natural Resources.

6. Plan and implement intensive project work on specific habitat management areas (deer yards, ruffed and sharptail grouse, goose, wetlands, and others) in cooperation with timber management activities and with State Department of Natural Resources.

LAND OWNERSHIP ADJUSTMENT PROGRAM AREA

1. Acquire lands needed to protect specific resources, public investments, or to allow for planned development.

2. Acquire lands with water frontage which will provide dispersed recreation, including Great Lakes shoreline, and designated scenic rivers.

3. Acquire lands with water frontage having the potential for developed recreation, including Great Lakes shoreline, and designated scenic rivers.

4. Acquire land needed in association with cross-country trail systems.

5. Acquire lands through exchange or purchase needed to increase timber production, watershed protection, and land management efficiency by blocking in ownership, shortening property lines, etc.

MINERALS PROGRAM AREA

1. Administer and manage present mineral development projects.

2. Inventory, evaluate, and plan areas of high mineral development potential.

3. Inventory, evaluate, and manage sand and gravel resources on each National Forest.

OUTDOOR RECREATION PROGRAM AREA

1. Operate and maintain existing, utilized recreation facilities.

2. Complete the development of existing facilities to prescribed standards.

3. Plan and develop water-related fishing and canoeing access facilities.

4. Plan and develop nonmotorized trail systems (hiking, horseback riding, cross-country skiing).

5. Plan and develop new dispersed recreation campgrounds (primitive level 1 to intermediate level 3).

6. Plan and develop motorized trail systems.

RANGE PROGRAM AREA

1. Inventory existing and potential range resources.

2. Identify the range resource demands and capabilities on each National Forest.

3. Plan and manage grazing allotments on National Forests, where feasible.

SOILS PROGRAM AREA

1. Analyze soils information needs through the completion of Unit planning and development of needed Forest soil programs.

2. Collect and apply soil nutrient information.

3. Establish soil monitoring sites.

SPECIAL AREAS PROGRAM AREA

1. Administer existing "special areas" according to approved plans.

2. Provide needed protection to areas identified as potential "special areas."

3. Complete plans for recently designated "special areas."

4. Complete required evaluations of proposed "special areas" (wilderness, wild and scenic rivers, etc.).

5. As part of the Forest land use planning process, identify potential "special areas."

TIMBER PROGRAM AREA

1. Plan and prepare timber management activities through the compartment prescription process which are fully coordinated with other resource needs.

2. Plan and offer timber for sale which meets the Forest's potential yield of high quality products.

3. Plan and implement reforestation measures so that all regeneration cuts are stocked with trees, either by natural or artificial means, within 2-5 years, to meet management direction.

4. Plan and implement reforestation projects so that all poorly stocked commercial forest land, in coordination with other resource needs, is stocked with trees, either by natural or artificial means, to meet management direction within 10 years.

5. Plan and implement timber stand improvement work on high potential value stands that have high volume potentials.

6. Plan and implement a tree improvement program to utilize genetically improved planting stock.

WATER QUALITY PROGRAM AREA

1. Protect Lake States water quality by proper design and operation of sanitary and solid waste systems and by careful management of other National Forest activities.

2. Delineate baseline water quality of lakes and streams.

3. Establish a monitoring system to detect changes and causes of change in water quality.

4. Plan and implement restoration and rehabilitation projects to protect features and valuable investments on each National Forest.

WETLANDS PROGRAM AREA

1. Continue current wetland programs and periodically evaluate effectiveness.

2. Inventory the wetlands that are not yet inventoried.

3. Develop plans through the land use planning process.

4. Implement newly developed plans.

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ADMINISTRATIVE USE

Use of resources or equipment by Forest Service personnel for management purposes.

ADVERSE CONDEMNATION

The acquiring of property by the government against the owner's wishes. The owner is paid the fair market value for the property as determined by the court. (This differs from "friendly condemnation" wherein the supposed owner is willing to sell but condemnation is needed to legally determine the actual owner of the property, because of some problem in the land records.)

ALLOWABLE HARVEST

The maximum harvest that could be planned to achieve the optimum perpetual sustained-yield harvesting level attainable with intensive forestry on regulated areas, considering the productivity of the land, conventional logging technology, standard cultural treatments, and interrelationship with other resource uses and the environment.

ANIMAL UNIT MONTH (AUM)

Is equivalent to one cow and calf grazing for 1 month.

AQUIFER

Ground water in permeable underground formations.

BIOTA

The animal and plant life of a region or period.

BOARD FOOT

A measure of lumber. The cubic equivalent of a piece of lumber 12 inches wide, 12 inches long, and 1 inch thick.

BREAST HIGH

Normally 4½ feet above ground level.

CAPABILITY

Evaluation of the characteristics of existing facilities to produce goods and services.

CARRYING CAPACITY (ecological)

The number or weight of organisms that can survive without causing deterioration of the ecosystem.

CLEARCUTTING

A method of timber harvesting in which all trees, merchantable or unmerchantable (over 2 inches DBH) are cut. Regeneration results in an even-aged stand.

COMMERCIAL FOREST LAND

Forest land capable of bearing merchantable timber, currently or prospectively accessible, and not withdrawn from such use.

COMPARTMENT

An organizational unit or small subdivision of forest area for purposes of orientation, administration, and silvicultural operations, and defined by permanent boundaries, either of natural features or artificially marked, which are not necessarily coincident with stand boundaries.

COMPARTMENT EXAMINATION (COMPEX)

A broad term covering the work of gathering data on the resources and related activities in a compartment with the objective of preparing a compartment prescription.

COMPARTMENT PRESCRIPTION

The land manager's written plan of work for a compartment; coordinating by environmental analysis, all resources and related activities by specific treatment needs to attain the Forest's management objectives and noting any special considerations.

CORD

Cut rough wood equivalent in cubic content to a pile of wood 4 feet high, 4 feet wide, and 8 feet long.

CUBIC FEET

A measure of the total volume of wood in a tree, excluding bark, and measured in multiples of the standard cubic foot, i.e. 12 inches x 12 inches x 12 inches.

CUNIT

Term used to express 100 cubic feet of timber.

CULMINATION OF MEAN ANNUAL GROWTH

The time in the life of a tree's growth when annual growth begins to decline.

CULTURAL LOADING

Phosphorus and nitrogen inputs from man-caused sources.

CULTURAL TREATMENT

Activities designed to modify vegetation for a desired objective.

DBH

Diameter breast high outside the bark.

DEMAND

The quantity of a service or commodity needed to meet the requirements of the user.

DEMONSTRATION AREA

A small area of National Forest land managed to provide the public with resource management educational and informational opportunities.

DEVELOPED RECREATION AREA

A relatively small, distinctly defined portion of the National Forest where concentrated public use for the more traditional recreation purposes predominates; e.g. campgrounds, picnic areas, swimming areas, etc.

DIB

Diameter inside bark.

DISPERSED RECREATION

Recreational use of trails, natural lakes, ponds, rivers, streams, and generally undeveloped area. Includes such activities as hiking, backpacking, hunting, fishing, snowmobiling, and cross-country skiing.

DIVERSITY

A term to describe a concept that tries to integrate all the variables that make up a habitat. At present, it is usually applied to the habitat for animal species groups. The more diverse the habitat (age, size, species, spacing, etc., of vegetation; fertility, slope, etc., of soil, and so on) the greater potential there is of having a stable population of all the animal species usually associated with that habitat.

DIVERSITY INDEX

A method of measuring the suitability of a habitat to produce that animal species group that is normal to that particular soil-vegetation-terrain association.

DOB

Diameter outside bark

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DOMINANT OR PRIMARY USE

Management of land for a primary use while allowing management of those secondary uses which are compatible. Secondary or subordinate uses of the land are compatible if they occur without impairing the area for its primary purpose.

ECOSYSTEM

Any area of nature that includes living organisms and nonliving substances interacting to produce an exchange of materials between the living and nonliving parts.

ENVIRONMENTAL ANALYSIS REPORT

A document prepared with a project proposal to evaluate the environmental impacts associated with the action or actions proposed.

ENVIRONMENTAL STATEMENT

A formal document to be submitted to the Council on Environmental Quality for consideration of the environmental impacts to be expected from program implementation.

ESSENTIALLY UNDISTURBED LANDS

Lands that may have been disturbed in the past by man's activities but where time and natural processes have virtually obliterated the evidence of man's presence.

FOREST ROAD DEVELOPMENT

A permanent road that has been planned, developed, and maintained to implement the administration and management of the National Forests.

FUEL

All vegetative material, dead or alive, and other animal or mineral material that will support combustion. It may be created or changed by natural phenomena or man's activities.

FUEL BREAK

A strip or block of land on which native vegetation has been permanently modified so that fires burning into it can be more readily extinguished. A preconstructed fireline may or may not occur within the fuel break.

GROWING STOCK

All the trees in a forest or in a specified part of it, generally expressed in terms of number or volume.

HABITAT

The kind of environment in which an animal or plant is commonly found. This environment would include food, cover, and protection for the plant or animal, e.g. a northern conifer forest, a wetland.

IMPROVEMENT CUTTING

The elimination or suppression of less valuable trees in favor of more valuable tree growth, typically in mixed uneven-aged forests. (Includes cleanings, thinnings, and liberation felling.)

INDIGENOUS SPECIES

Native or formerly native fish or wildlife.

INTERDISCIPLINARY

Combining or involving two or more academic disciplines or fields of study.

INTERMEDIATE CUTTING

Any removal of trees from a timber stand between the time of their formation and the harvest cutting.

LAND SUITABILITY

Evaluation of the characteristics of the land to determine the appropriate alternatives to produce goods and services.

LOADING CRITERIA

Maximum nutrient input a lake can tolerate without visibly noticeable changes in water quality.

MANAGEMENT PRESCRIPTIONS

Prescriptions for future land management actions for a specific land area.

MANAGEMENT ZONE

A parcel of land allocated to particular management practices in order to attain a desirable mixture of goods and user experience levels.

MAXIMIZED USE

Production of the greatest, usually single, goods or services for the least financial investment. This practice invariably precludes even considering uses other than the one(s) which is of primary interest.

MONOTYPE

One timber type in relatively square shape extending over 200 acres in size and of approximately one age class. An area made up of the same species but with a good distribution of different age classes is not considered a monotype for the purpose of this Guide.

MULTIPLE USE

The management of all the renewable surface resources of the National Forests so they are utilized in combinations that best meet the needs of the American people; making the most judicious use of the land and conforming to changing needs and conditions. Multiple use management will consider the relative values of the various resources and *not* necessarily the combination of uses that gives the greatest dollar return or unit output.

NONCOMMERCIAL FOREST LAND

All forest land not included in commercial forest land, generally of a site-quality capable of less than 20 cubic feet of growth per acre per year. Includes inaccessible forest land and land reserved for wilderness, natural areas, or refuges.

NUTRIENT LOADING MODELS

Predictive equations used to estimate the amount of nutrients entering a lake from various natural and man-caused sources.

OFF-ROAD VEHICLE (ORV)

A vehicle capable of cross-country travel or travel on low-grade roads and trails, e.g., motor bikes, snowmobiles, etc. Also referred to as All Terrain Vehicle (ATV).

PLANNING AREA

Lake States—portions of Michigan, Wisconsin, and Minnesota.

PRESCRIBED FIRE

Skillful application of fire to forest fuels under conditions of weather, fuel moisture, soil moisture, and other conditions that will produce the intensity of heat and rate of spread required to accomplish certain planned benefits to one or more resource management objectives. Its objective is to employ fire scientifically to realize maximum net benefits at minimum damage and acceptable cost.

PROTEIN PRODUCTION

Harvesting fish for domestic consumption.

PULPWOOD

Wood normally unsuitable for sawlogs, cut and prepared for manufacture into woodpulp for producing paper.

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RECREATION EXPERIENCE LEVELS
See last page of glossary.

RECREATION VISITOR DAY (RVD)
The presence of one person for 12 hours or 12 persons for 1 hour engaged in recreation activity.

ROTATION
The planned number of years between the formation of a stand of timber and its final cutting at a specified stage of maturity.

RUNOFF
That portion of the precipitation that appears in surface streams.

SAWLOG
A log considered suitable in size and quality for producing lumber.

SCENIC VISTA
A point along a route of travel which affords a panoramic, unusual, or highly pleasant view.

SEDIMENTATION
The deposition of sediment.

SHELTERWOOD
A method of even-aged silviculture in which the old crop of trees is removed in two or more successive cuttings.

SILVICULTURE
The theory and practice of controlling the establishment, composition, constitution, and growth of forests.

SOLITUDE
An experience where man may commune with his surroundings in a natural setting generally undisturbed by sound or sight of technology.

SPECIAL AREAS
Special areas are zones or areas classified by Congress, Secretary of Agriculture, Forest Service Chief or Regional Forester (such as wilderness, research, or natural). As the term is used herein, areas similar in characteristic to the above but which are classified special by virtue of Regional Forester or Forest Supervisor policy are also included.

STREAMFLOW
The discharge of water from a watershed that occurs in a natural stream channel.

SUPPLY
The available quantity of a commodity or service at a point in time under described circumstances.

SUSTAINED YIELD
The achievement and maintenance in perpetuity of a high-level, annual or regular, periodic output of the various renewable resources of the National Forests without impairment of the productivity of the land.

TENTATIVE TARGET OUTPUTS
Anticipated long-range resource production levels as projected to the year 2000.

TRAVEL INFLUENCE ZONE
The area next to existing or proposed roads and trails. These are subject to special management measures to protect the aesthetic quality for the traveler.

TROPHIC STATE (ALSO TROPHIC CHARACTER)
The nutrient content of a body of water, i.e. oligotrophic (nutrient poor) or eutrophic (nutrient rich). The trophic state of a lake effects productivity of both fish and aquatic vegetation.

VISUAL QUALITY OBJECTIVES

Visual quality objectives are represented by five terms—preservation, retention, partial retention, modification, maximum modification. Except for preservation, each describes a different degree of acceptable alteration of the natural landscape based upon the importance of aesthetics. The degree of alteration is measured in terms of visual contrast with the surrounding natural landscape ("National Forest Landscape Management, Volumes 1 and 2").

VISUAL QUALITY OBJECTIVE	*DEFINITION*
PRESERVATION	Allows ecological changes only.
RETENTION	Provides for management activities which are not visually evident.
PARTIAL RETENTION	Management activities to remain visually subordinate to the characteristic landscape.
MODIFICATION	Management activities may visually dominate the original characteristic landscape.
MAXIMUM MODIFICATION	Management activities of vegetation and landform alterations may dominate the characteristic landscape.

Pictorial representations of these objectives are in "National Forest Landscape Management, Volume 2, Chapter 1, The Visual Management System," Agriculture Handbook No. 462.

WATER INFLUENCE ZONE

The areas next to lakes and selected streams. These are subject to special management measures to protect water quality and aesthetic quality.

WATER QUALITY

The physical, chemical, and biological properties associated with the mineral and organic material suspended and dissolved in the water.

WATERSHED

The area drained by a stream and its tributaries.

WATER YIELD

Water runoff on a watershed, both surface and subsurface, which eventually reappears as streamflow.

WETLANDS

Includes features that are permanently wet or intermittently water covered, such as swamps, marshes, bogs, muskegs, potholes, swales, glades, and overflow land of river valleys.

SELECTION CRITERIA

LEVEL	EXPERIENCE	ENVIRONMENT	FACILITY
PRIMITIVE	Recreation opportunities to satisfy basic-needs to the maximum extent. A very high degree of basic outdoor skills required. Experiences of adventure, challenge, exploration, solitude, and physical achievement, in the absence of obvious controls, important to the user. Opportunity for extreme isolation. A feeling of being a part of both nature and a wilderness heritage.	No environmental modification unless absolutely necessary for resource protection. Unmodified natural environment and an absence of man-made developments for comfort or convenience dominates. Only necessary controls applied to users. No motorized access. An environment of spaciousness—seemingly unlimited horizons.	No facilities except as determined essential for resource protection. Native materials utilized where possible. Natural weathering of surfaces.
1	Recreation opportunities to satisfy basic-needs to a near maximum extent. High degree of basic outdoor skills involved. Feeling of physical achievement at reaching opportunities without mechanized access is important to the user. Adventure and challenge is afforded through minimum controls. High degree of opportunity for isolation. A feeling of being nearly primitive and closely associated with nature.	An essentially unmodified natural environment is the dominant consideration. Modifications for comfort and convenience are minimal. Controls of users not obvious. Spacing informal and dispersed to minimize contacts with other individuals or groups. Motorized access not provided or permitted.	Only essential facilities for resource protection. Use of on-site materials whenever possible. Facilities appear inconspicuous, substantial, harmonious. Finishes natural. Stains at time of initial construction, weathering thereafter. Use of paints or synthetic finishes discouraged.
2	Recreation opportunities to satisfy basic-needs to a near maximum extent as tempered by motorized access. A feeling of achievement for reaching the opportunity through challenging motorized access is important. Few controls evident to the user. Opportunities to socialize with others important although less so than at more primitive experience levels.	Some modification of the natural environment. Rustic or rudimentary facilities for comfort and convenience of users are provided. Improvements mostly for protection of the resources. Minimum controls are subtle. Spacing dispersed to minimize contacts with others. Motorized access provided or permitted. Primary access over primitive roads or trails or by experienced boat or aircraft users.	Facilities more for resource protection than for the comfort of users. Rustic materials—heavy timbers, roughsawn or split wood, local rock masonry—appear harmonious and substantial. Architecture functional and historic in nature. Color schemes blends into local environment with little contrast.
3 INTERMEDIATE	Recreation opportunities to satisfy basic-needs to an intermediate degree. Moderate degrees of outdoor skills are involved. Controls and regimentation afford a sense of security although some taste of adventure is still important to the user. Opportunities to socialize with others are equally important as isolation. A feeling of being close to nature.	Natural environment dominates but some modification for comfort and convenience of users. Facilities about equally for protection of resource and comfort/safety. Developed site density about 3 family groups per acre or less. Overstory and ground vegetation moderately modified to improve developed site durability and to provide sense of privacy. Inconspicuous control of vehicular traffic. Hard surfaced roads and trails using mostly native materials. Primary access over well-traveled roads or capable boat or aircraft operators. Visitor information services (VIS) are informal.	Facilities harmonize with environment in form and color—primarily of wood and masonry. Functional parts or small facilities such as fireplaces, buoys,etc., may be of materials selected for ease of maintenance, economy, and durability (square or round steel pipe, precast concrete, fiberglass, synthetic finishes, etc.) Architecture, symbol and signing "themes" should reflect the local—site, complex or composite—environment and not necessarily standardized over large geographic areas.
4	Recreation opportunities to satisfy basic-needs to only a moderate degree. Moderate degree of basic activity skills suffice. Sense of security sought by the user. Regimentation and fairly obvious controls are important. User is aware of opportunity to meet and be with other people—is obviously not isolated. Opportunity to be gregarious within relatively small groups. Some opportunity to use contemporary skills such as snow and water skiing are important.	Environment is substantially modified. Facilities primarily for comfort and convenience of users but luxury facilities not provided. Plant materials usually native but are purposefully situated. Moderate grading of land forms to maximize usefulness and durability. Most roads and trails hard surfaced. Traffic controls present and obvious. Access by paved highway or easily negotiated water or air routes. Visitor information services frequently available. Some opportunity to use contemporary skills such as snow and water skiing.	Facilities generally harmonize with surrounding environment but may contain focal points or trim of contrasting color, texture, form, etc. Architectural themes reflect historic, geological, ecological, or cultural characteristics of the site or area. In these, wood and masonry predominate but appropriate synthetics are allowed. Small facilities (tables, landing docks, trash containers, etc.) normally selected for ease of maintenance, economy, durability and practicality.
5 MODERN	Recreation opportunities to satisfy basic-needs to a modest degree. Skills required for basic outdoor activities are minimal. Feeling of security is very important to the user. Learning or beginning skills suffice when supplemented by administrative controls. High degree of opportunity to be gregarious. Abundant opportunity to develop and use comtemporary outdoor skills such as snow and water skiing. A feeling of being "next to nature" rather than closely associated with it.	High degree of environmental modification. Many facilities provided for comfort and convenience of users—modern sanitation and electrical systems and hookups, showers and laundry facilities, equipment rental, sales and services, etc. Overstory ground vegetation and landforms are graded or modified as necessary. Plant materials may be exotic or native. Mowed turf and trimmed hedges not unusual. Privacy often provided by man-made means—walls, structures, screening, etc. Synthetic materials used as needed. Obvious control of users for security and resource protection. Access by any appropiate high standard means. A somewhat urbanized environment surrounded by and interspersed with a natural environment. Formal VIS services usually available.	Facilities, architecture, signs, colors, textures, etc., are primarily "theme" oriented. In their entirety they harmonize with the natural, historical or cultural characteristics of the site or area, but they do not necessarily blend into it. Structures may utilize considerable glass to emphasize indoor-outdoor relationships. Colorful and unique within site transportation systems or vehicles may be utilized. Imaginative color/texture/form schemes may lend an atmosphere of gaity or history and aid the user's sense of location, direction, and security. Facilities are simple, foolproof, and safe or are operated for the user by an employee, concessionaire, etc.

NATIONAL FOREST LEVELS OF OUTDOOR RECREATION EXPERIENCES
ASSOCIATED WITH ENVIRONMENTAL AND DEVELOPMENT CONSIDERATIONS

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